



DEPARTMENT OF BUDGET & MANAGEMENT

Systems Development Life Cycle (SDLC)

**Volume 4
Templates**

August 2006

Table of Contents

Change Implementation Notice	3
Concept Proposal	4
Conversion Plan	6
Disposition Plan	12
Functional Requirements Document.....	15
Implementation Plan	21
Integration Document	28
Maintenance Manual.....	31
Operations Manual.....	36
Post-Implementation Review Report.....	39
Post-Termination Review Report	46
Project Management Charter	48
Project Management Plan	49
Risk Management Plan	57
Security Risk Assessment	60
Software Development Document.....	61
System Administration Manual	65
System Boundary Document	72
System Design Document.....	84
Test Analysis Approval Determination	92
Test Analyst Report	95
Test and Evaluation Master Plan	99
Test Problem Report	105
Training Plan.....	107
User Manual.....	111
Version Description Document.....	114

CHANGE IMPLEMENTATION NOTICE

CHANGE IMPLEMENTATION NOTICE

For the _____ System

This notice is to request a change for the:

Application Name: _____
Located at: _____

The change requested is as follows:

This office rates the urgency of this request as:

____ Critical (Address ASAP, possibly with a patch)
____ Important (Address in the next version release)
____ Nice to have (Not necessary to operation, but would improve the system)

Change implementation notice number (CIN): _____

Signed: _____ Date: _____
Local System Administrator

Signed: _____ Date: _____
Suggesting End User

CONCEPT PROPOSAL

Overview

The Concept Proposal is the first document to be completed in the Systems Development Life Cycle (SDLC). The purpose is to highlight where strategic goals are not being met or where mission performance needs to be improved. The Project Manager prepares the Concept Proposal for Agency CIO and Program Sponsor approval. The Concept Proposal should be no more than 2-5 pages in length and include the content outlined below:

1 TITLE OF INVESTMENT

The Concept Proposal should have a name of a system or project.

1.1 Originator

Identify the originator organization and sponsor/manager names with signatures. If an Integrated Project Team (IPT) is used, provide all the names of the team.

1.2 Date

The Concept Proposal should be dated.

2 DESCRIPTION OF INVESTMENT

Provide a brief description of the investment. Is this a software development effort, a modernization of a current system, purchasing COTS software, integration effort, etc.

2.1 Mission/Goals Investment Supports

Cite the latest MFR Goals. Explain how this investment will fit into those plans. Describe the magnitude and importance of the investment in relation to those goals. Discuss the timing of the investment. Indicate if other Governmental agencies or State components are impacted.

2.2 Existing Structure

Evaluate where you are currently versus where you should be (i.e., baseline assessment). Analyze reasons for any performance gap. Relate to your current architecture and your IT Strategic Plans.

2.3 Benefits

Explain why expectations are not being met (i.e., what problems are occurring or anticipated). Identify the internal or external stakeholders or beneficiaries and what needs to be done to satisfy them. Identify specific areas where performance does not meet expectations. Identify the high-level performance goals of this investment.

2.4 Warranted Investment

Does this investment support core/priority mission functions that need to be performed by the government? Is there another private sector or governmental source that can better support the function? Does the investment support simplified or redesigned work processes

CONCEPT PROPOSAL

that reduce costs, improve effectiveness, and make maximum use of commercial off the shelf (COTS) technology?

2.5 Funding

Provide a rough order of magnitude estimate for the total acquisition costs. Identify the anticipated source of the investment throughout its life cycle.

CONVERSION PLAN

Overview

The Conversion Plan describes the strategies involved in converting data from an existing system to another hardware or software environment. It is appropriate to reexamine the original system's functional requirements for the condition of the system before conversion to determine if the original requirements are still valid. An outline of the Conversion Plan is shown below.

1 INTRODUCTION

This section provides a brief description of introductory material.

1.1 Purpose and Scope

This section describes the purpose and scope of the Conversion Plan. Reference the information system name and provide identifying information about the system undergoing conversion.

1.2 Points of Contact

This section identifies the System Proponent. Provide the name of the responsible organization and staff (and alternates, if appropriate) who serve as points of contact for the system conversion. Include telephone numbers of key staff and organizations.

1.3 Project References

This section provides a bibliography of key project references and deliverables that have been produced before this point in the project development. These documents may have been produced in a previous development life cycle that resulted in the initial version of the system undergoing conversion or may have been produced in the current conversion effort as appropriate.

1.4 Glossary

This section contains a glossary of all terms and abbreviations used in the plan. If it is several pages in length, it may be placed in an appendix.

2 CONVERSION OVERVIEW

This section provides an overview of the aspects of the conversion effort, which are discussed in the subsequent sections.

2.1 System Overview

This section provides an overview of the system undergoing conversion. The general nature or type of system should be described, including a brief overview of the processes the system is intended to support. If the system is a database or an information system, also include a general discussion of the type of data maintained, the operational sources, and the uses of those data.

2.2 System Conversion Overview

This section provides an overview of the planned conversion effort.

2.2.1 Conversion Description

This section provides a description of the system structure and major components. If only selected parts of the system will undergo conversion, identify which components will and will not be converted.

If the conversion process will be organized into discrete phases, this section should identify which components will undergo conversion in each phase. Include hardware, software, and data as appropriate. Charts, diagrams, and graphics may be included as necessary. Develop and continuously update a milestone chart for the conversion process.

2.2.2 Type of Conversion

This section describes the type of conversion effort. The software part of the conversion effort usually falls into one of the following categories:

- Intra language conversion is a conversion between different versions of the same computer language or different versions of a software system, such as a database management system (DBMS), operating system, or local area network (LAN) management system.
- Inter language conversion is the conversion from one computer language to another or from one software system to another.
- Same compiler conversions use the same language and compiler versions. Typically, these conversions are performed to make programs conform to standards, improve program performance, convert to a new system concept, etc. These conversions may require some program redesign and generally require some reprogramming.

In addition to the three categories of conversions described above, other types of conversions may be defined as necessary.

2.2.3 Conversion Strategy

This section describes the strategies for conversion of system hardware, software, and data.

2.2.3.1 *Hardware Conversion Strategy*

This section describes the strategy to be used for the conversion of system hardware, if any. Describe the new (target) hardware environment, if appropriate.

2.2.3.2 *Software Conversion Strategy*

This section describes the conversion strategy to be used for software.

2.2.3.3 *Data Conversion Strategy*

This section describes the data conversion strategy, data quality assurance,

and the data conversion controls.

2.2.3.4 Data Conversion Approach

This section describes the specific data preparation requirements and the data that must be available for the system conversion. If data will be transported from the original system, provide a detailed description of the data handling, conversion, and loading procedures. If these data will be transported using machine-readable media, describe the characteristics of those media.

2.2.3.5 Interfaces

In the case of a hardware platform conversion - such as mainframe to client/server - the interfaces to other systems may need reengineering. This section describes the affected interfaces and the revisions required in each.

2.2.3.6 Data Quality Assurance and Control

This section describes the strategy to be used to ensure data quality before and after all data conversions. This section also describes the approach to data scrubbing and quality assessment of data before they are moved to the new or converted system. The strategy and approach may be described in a formal transition plan or a document if more appropriate.

2.2.3.7 Conversion Risk Factors

This section describes the major risk factors in the conversion effort and strategies for their control or reduction. Descriptions of the risk factors that could affect the conversion feasibility, the technical performance of the converted system, the conversion schedule, or costs should be included. In addition, a review should be made to ensure that the current backup and recovery procedures are adequate as well as operational.

2.3 Conversion Tasks

This section describes the major tasks associated with the conversion, including planning and pre-conversion tasks.

2.3.1 Conversion Planning.

This section describes planning for the conversion effort. If planning and related issues have been addressed in other life-cycle documents, reference those documents in this section. The following list provides some examples of conversion planning issues that could be addressed:

- Analysis of the workload projected for the target conversion environment to ensure that the projected environment can adequately handle that workload and meet performance and capacity requirements
- Projection of the growth rate of the data processing needs in the target environment to ensure that the system can handle the projected near-term growth, and that it has the expansion capacity for future needs
- Analysis to identify missing features in the new (target) hardware and software environment that were supported in the original hardware and software and used in the original system

CONVERSION PLAN

- Development of a strategy for recoding, reprogramming, or redesigning the components of the system that used hardware and software features not supported in the new (target) hardware and software environment but used in the original system

2.3.2 Pre-Conversion Tasks

This section describes all tasks that are logically separate from the conversion effort itself but that must be completed before the initiation, development, or completion of the conversion effort. Examples of such pre-conversion tasks include:

- Finalize decisions regarding the type of conversion to be pursued
- Install changes to the system hardware, such as a new computer or communications hardware, if necessary.
- Implement changes to the computer operating system or operating system components, such as the installation of a new LAN operating system or a new windowing system.
- Acquire and install other software for the new environment, such a new DBMS or document imaging system.

2.3.3 Major Tasks and Procedures

This section addresses the major tasks associated with the conversion and the procedures associated with those tasks.

2.3.3.1 *Major Task Name*

Provide a name for each major task. Provide a brief description of each major task required for the conversion of the system, including the tasks required to perform the conversion, preparation of data, and testing of the system. If some of these tasks are described in other life-cycle documents, reference those documents in this section.

2.3.3.2 *Procedures*

This section should describe the procedural approach for each major task. Provide as much detail as necessary to describe these procedures.

2.4 Conversion Schedule

This section provides a schedule of activities to be accomplished during the conversion. Pre-conversion tasks and major tasks for all hardware, software, and data conversions described in Section 2.3, Conversion Tasks, should be described here and should show the beginning and end dates of each task. Charts may be used as appropriate.

2.5 Security

If appropriate for the system to be implemented, provide an overview of the system security features and the security during conversion.

2.5.1 System Security Features

The description of the system security features, if provided, should contain a brief overview and discussion of the security features that will be associated with the system when it is converted. Reference other life-cycle documents as appropriate. Describe the

CONVERSION PLAN

changes in the security features or performance of the system that would result from the conversion.

2.5.2 Security During Conversion

This section addresses security issues specifically related to the conversion effort.

3 CONVERSION SUPPORT -

This section describes the support necessary to implement the system. If there are additional support requirements not covered by the categories shown here, add other subsections as needed.

3.1 Hardware

This section lists support equipment, including all hardware to be used for the conversion.

3.2 Software

This section lists the software and databases required to support the conversion. It describes all software tools used to support the conversion effort, including the following types of software tools, if used:

- Automated conversion tools, such as software translation tools for translating among different computer languages or translating within software families (such as, between release versions of compilers and DBMSs)
- Automated data conversion tools for translating among data storage formats associated with the different implementations (such as, different DBMSs or operating systems)
- Quality assurance and validation software for the data conversion that are automated testing tools
- Computer-aided software engineering (CASE) tools for reverse engineering of the existing application
- CASE tools for capturing system design information and presenting it graphically
- Documentation tools such as cross-reference lists and data attribute generators
- Commercial off-the-shelf software and software written specifically for the conversion effort

3.3 Facilities

This section identifies the physical facilities and accommodations required during the conversion period.

3.4 Materials

This section lists support materials.

3.5 Personnel

This section describes personnel requirements and any known or proposed staffing, if appropriate. Also describe the training, if any, to be provided for the conversion staff

CONVERSION PLAN

3.5.1 Personnel Requirements and Staffing

This section describes the number of personnel, length of time needed, types of skills, and skill levels for the staff required during the conversion period.

3.5.2 Training of Conversion Staff

This section addresses the training, if any, necessary to prepare the staff for converting the system. It should provide a training curriculum, which lists the courses to be provided, a course sequence, and a proposed schedule. If appropriate, it should identify by job description which courses should be attended by particular types of staff. Training for users in the operation of the system is not presented in this section, but is normally included in the Training Plan.

DISPOSITION PLAN

Overview

The Disposition Plan is the most significant deliverable in the disposition of the information system, and the plan will vary according to system and Agency requirements. The objectives of the plan are to end the operation of the system in a planned, orderly manner and to ensure that system components and data are properly archived or incorporated into other systems. At the end of this task, the system will no longer exist as an independent entity. The completion of the systems life cycle is carefully planned and documented to avoid disruption of the organizations using the system or the operation of other systems that will use the data and/or software of the present system.

The Disposition Plan needs to be an extension of the Records Management function. Records Management - what is kept, what is a legal "record," retention period, etc. - is a topic beyond the scope of this SDLC. The software, hardware, and data of the current system are disposed of in accordance with organization needs and pertinent laws and regulations. Software or data of the system may be transferred to other existing systems, migrated to an entirely new system, or archived for future use. Hardware is made available for future use, added to surplus, or discarded.

In conducting the disposition task, the following items should be considered:

- All known users should be informed of the decision to terminate operation of the system before the actual termination date.*
- Although the current system may be terminated, in many cases the data will continue to be used through other systems. The specific processing logic used to transfer the data to another system is developed as part of the data conversion planning for that system.*
- In some instances, software may be transferred to a replacement system. For example, a component of the current system may become a component of the replacement system without significant rewriting of programs.*
- Effective reactivation of the system in the future will depend heavily on having complete documentation. It is generally advisable to archive all documentation, including the life-cycle products generated during the earliest tasks of the life cycle as well as the documentation for users and for operation and maintenance personnel.*

The Disposition Plan addresses how the various components of the system are handled at the completion of operations, including software, data, hardware, communications, and documentation. The plan also notes any future access to the system. The plan is lead and performed by a Project Manager; supported by the records management staff, the project team, and the functional staff; and reviewed by the QA manager. Other tasks include the following:

- Notify all known users of the system of the planned date after which the system will no longer be available.*
- Copy data to be archived onto permanent storage media, and store media in a location designated by the Disposition Plan. Work with the project management*

DISPOSITION PLAN

team for other systems to achieve a smooth transfer of data from the current system to these systems.

- *Copy software onto permanent storage media, and store media in location designated in Disposition Plan. (Software to be stored may include communications and systems software as well as application software.) Work with the project team for other systems to ensure effective migration of the current system software to be used by these systems.*
- *Store other life-cycle products, including system documentation, in archive locations designated by the Disposition Plan.*
- *Dispose of equipment used exclusively by this system in accordance with the Disposition Plan (refer to excess procedures).*
- *Complete and update the Disposition Plan to reflect actual disposition of data, software, and hardware.*
- *Plan for the shutdown of the project, including the reassignment of project staff, the storage of project records, and the release of project facilities*

1 INTRODUCTION

This section provides a brief description of introductory material.

1.1 Purpose and Scope

This section describes the purpose and scope of the Disposition Plan. Reference the information system name and provide identifying information about the system-undergoing disposition.

1.2 Points of Contact

This section identifies the System Proponent. Provide the name of the responsible organization and staff (and alternates, if appropriate) who serve as points of contact for the system disposition. Include telephone numbers of key staff and organizations.

1.3 Project References

This section provides a bibliography of key project references and deliverables that have been produced before this point in the project development. These documents may have been produced in a previous development life cycle that resulted in the initial version of the system now undergoing disposition or may have been produced in subsequent enhancement efforts as appropriate.

1.4 Glossary

This section contains a glossary of all terms and abbreviations used in the plan. If it is several pages in length, it may be placed in an appendix.

2 SYSTEM DISPOSITION

2.1 Notifications

This section describes the plan for notifying known users of the system being shut down,

DISPOSITION PLAN

and other affected parties, such as those responsible for other, interfacing systems, and operations staff members involved in running the system.

2.2 Data Disposition

This section describes the plan for archiving, deleting, or transferring to other systems the data files and related documentation in the system being shut down.

2.3 Software Disposition

This section describes the plan for archiving, deleting, or transferring to other systems the software library files and related documentation in the system being shut down.

2.4 System Documentation Disposition

This section describes the plan for archiving, deleting, or transferring to other systems the hardcopy and softcopy systems and user documentation for the system being shut down.

2.5 Equipment Disposition

This section describes the plan for archiving, deleting, or transferring to other systems the hardware and other equipment used by the system being shut down.

3 PROJECT CLOSEDOWN

3.1 Project Staff

This section describes the plan for notifying project team members of the shutdown of the system, and the transfer of these team members to other projects.

3.2 Project Records

This section describes the plan for archiving, deleting, or transferring to other projects the records of project activity for the project that has been maintaining the system being shut down.

3.3 Facilities

This section describes the plan for transferring or disposing of facilities used by the project staff for the system being shut down.

FUNCTIONAL REQUIREMENTS DOCUMENT

FUNCTIONAL REQUIREMENTS DOCUMENT

Overview

The functional requirements document (FRD) is a formal statement of an application's functional requirements. It serves the same purpose as a contract. The developers agree to provide the capabilities specified. The client agrees to find the product satisfactory if it provides the capabilities specified in the FRD.

Quality is meeting requirements. For that reason, the FRD is the central document in system development. It is used for the following:

- *Designing and developing the application system.*
- *Evaluating the product in all subsequent phases of the life cycle.*
- *Determining the success of the project.*

The FRD has the following characteristics:

- *It demonstrates that the application provides value to the State in terms of the business objectives and business processes in the 5-year plan.*
- *It contains a complete set of requirements for the application. It leaves no room for anyone to assume anything not stated in the FRD.*
- *It is solution independent. The ERD is a statement of what the application is to do—not of how it works. The FRD does not commit the developers to a design. For that reason, any reference to the use of a specific technology is entirely inappropriate in an FRD.*

A requirement is a condition that the application must meet for the customer to find the application satisfactory. A requirement has the following characteristics:

- *It provides a benefit to the organization.*
- *It describes the capabilities the application must provide in business terms.*
- *It does not describe how the application provides that capability.*
- *It does not describe such design considerations as computer hardware, operating system, and database design.*
- *It is stated in unambiguous words. Its meaning is clear and understandable.*
- *It is verifiable.*

1 GENERAL

1.1 Project Description

Provide a brief overview of the project.

FUNCTIONAL REQUIREMENTS DOCUMENT

1.1.1 Background

Summarize the conditions that created the need for the application.

1.1.2 Purpose

Describe the business objectives and business processes from the CONOPS document and the CBA that this application supports.

1.1.3 Assumptions and Constraints

Assumptions are future situations, beyond the control of the project, whose outcomes influence the success of a project. The following are examples of assumptions:

- Availability of a hardware/software platform
- Pending legislation
- Court decisions that have not been rendered
- Developments in technology

Constraints are conditions outside the control of the project that limit the design alternatives. The following are examples of constraints:

- Government regulations
- Standards imposed on the solution
- Strategic decisions

Be careful to distinguish constraints from preferences. Constraints exist because of real business conditions. Preferences are arbitrary. For example, a delivery date is a constraint only if there are real business consequences that can happen as a result of not meeting the date. For example, if failing to have the subject application operational by the specified date places the State in legal default, the date is a constraint. A date chosen arbitrarily is a preference. Preferences, if included in the FRD, should be noted as such.

1.1.4 Interfaces to External Systems

Name the applications with which the subject application must interface, State the following for each such application:

- Owner of application (if external to the Agency)
- Details of interface (only if determined by the other application)

1.2 Points of Contact

List the names, titles, and roles of the major participants in the project. At a minimum, list the following:

- Project Manager
- Development project leader
- User contacts

FUNCTIONAL REQUIREMENTS DOCUMENT

- Agency employee whose signature constitutes acceptance of the FRD

1.3 Document References

Name the documents that were sources of this version of the FRD. Include meeting summaries, white paper analyses, and other System Development Life Cycle deliverables, as well as any other documents that contributed to the FRD. Include the Configuration Management identifier and date published for each document listed.

2 FUNCTIONAL REQUIREMENTS

The functional requirements describe the core functionality of the application. This section includes the data and functional process requirements.

2.1 Data Requirements

Describe the data requirements by producing a logical data model, which consists of entity relationship diagrams, entity definitions, and attribute definitions. This is called the application data model. The data requirements describe the business data needed by the application system. Data requirements do not describe the physical database.

2.2 Functional Process Requirements

Process requirements describe what the application must do. Process requirements relate the entities and attributes from the data requirements to the users' needs.

State the functional process requirements in a manner that enables the reader to see broad concepts decomposed into layers of increasing detail.

Process requirements may be expressed using data flow diagrams, text, or any technique that provides the following information about the processes performed by the application:

- Context
- Detailed view of the processes
- Data (attributes) input to and output from processes
- Logic used inside the processes to manipulate data
- Accesses to stored data
- Processes decomposed into finer levels of detail

3 OPERATIONAL REQUIREMENTS

Operational requirements describe the non-business characteristics of an application.

State the requirements in this section. Do not state how these requirements will be satisfied. For example, in the Reliability section, answer the question, "How reliable must the system be?" Do not state what steps will be taken to provide reliability.

Distinguish preferences from requirements. Requirements are based on business needs. Preferences are not. If, for example, the user expresses a desire for sub-second response but does not have a business-related reason for needing it, that desire is a preference.

FUNCTIONAL REQUIREMENTS DOCUMENT

3.1 Security

The security Section describes the need to control access to the data. This includes controlling who may view and alter application data.

State the consequences of the following breaches of security in the subject application:

- Erasure of contamination of application data
- Disclosure of Government secrets
- Disclosure of privileged information about individuals

State the type(s) of security required. Include the need for the following as appropriate:

State if there is a need to control access to the facility housing the application.

- State the need to control access by class of users. For example, “No user may access any part of this application who does not have at least a (specified) clearance.”
- State the need to control access by data attribute. State, for example, if one group of users may view an attribute but may not update it while another type of user may update or view it.
- State the need to control access based on system function. State for example, if there is a need to grant one type of user access to certain system functions but not to others. For example, “This function is available only to the system administrator.”
- State if there is a need for accreditation of the security measures adopted for this application. For example, C2 protection must be certified by an independent authorized organization.

3.2 Audit Trail

List the activities that will be recorded in the application’s audit trail. For each activity, list the data to be recorded.

3.3 Data Currency

Data currency is a measure of how recent data are. This section answers the question, “When the application responds to a request for data how current must those data be?” Answer that question for each type of data request.

3.4 Reliability

Reliability is the probability that the system will be able to process work correctly and completely without being aborted.

State the following in this section:

- What damage can result from this system’s failure?
 - Loss of human life
 - Complete or partial loss of the ability to perform a mission-critical function
 - Loss of revenue
 - Loss of employee productivity

FUNCTIONAL REQUIREMENTS DOCUMENT

- What is the minimum acceptable level of reliability?

State required reliability in any of the following ways:

- Mean Time Between Failure is the number of time units the system is operable before the first failure occurs.
- Mean Time To Failure is computed as the number of time units before the system is operable divided by the number of failures during the time period.
- Mean Time To Repair is computed as the number of time units required to perform system repair divided by the number of repairs during the time period.

3.5 Recoverability

Recoverability is the ability to restore function and data in the event of a failure. Answer the following questions in this section:

- In the event the application is unavailable to users (down) because of a system failure, how soon after the failure is detected must function be restored?
- In the event the database is corrupted, to what level of currency must it be restored? For example “The database must be capable of being restored to its condition on no more than one hour before the corruption occurred.”
- If the process site (hardware, data, and onsite backup) is destroyed how soon must the application be able to be restored?

3.6 System Availability

System availability is the time when the application must be available for use. Required system availability is used in determining when maintenance may be performed. In this section state the hours (including time zone) during which the application is to be available to users. For example, “The application must be available to users Monday through Friday between the hours of 6:30 a.m. and 5:30 p.m. EST.” If the application must be available to users in more than one time zone state the earliest start time and the latest stop time.

Include the times when usage is expected to be at its peak. These are times when system unavailability is least acceptable.

3.7 Fault Tolerance

Fault tolerance is the ability to remain partially operational during a failure. Describe the following in this section:

- Which functions need not be available at all times?
- If a component fails what (if any) functions must the application continue to provide? What level of performance degradation is acceptable?

For most applications, there are no fault tolerance requirements. When a portion of the application is unavailable there is no need to be able to use the remainder for the

FUNCTIONAL REQUIREMENTS DOCUMENT

application.

3.8 Performance

Describe the requirements for the following:

- Response time for queries and updates
- Throughput
- Expected volume of data
- Expected volume of user activity (for example, number of transactions per hour, day, or month)

3.9 Capacity

List the required capacities and expected volumes of data in business terms. For example, state the number of cases about which the application will have to store data. For example, “The project volume is 600 applications for naturalization per month.” State capacities in terms of the business. Do not state capacities in terms of system memory requirements or disk space.

3.10 Data Retention

Describe the length of time the data must be retained. For example, “information about an application for naturalization must be retained in immediately accessible from for three years after receipt of the application.”

4 REQUIREMENTS TRACE ABILITY MATRIX

The requirements trace ability matrix (RTM) provides a method for tracking the functional requirements and their implementation through the development process. Each requirement is included in the matrix along with its associated section number. As the project progresses, the RIM is updated to reflect each requirement’s status. When the product is ready for system testing, the matrix lists each requirement, what product component addresses it, and what test verify that it is correctly implemented.

Include columns for each of the following in the RTM:

- Requirement description
- Requirement reference in FRD
- Verification Method
- Requirement reference in Test Plan

5 GLOSSARY

Include business terms peculiar to the application. Do not include any technology-related terms.

IMPLEMENTATION PLAN

Overview

The Implementation Plan describes how the information system will be deployed, installed and transitioned into an operational system. The plan contains an overview of the system, a brief description of the major tasks involved in the implementation, the overall resources needed to support the implementation effort (such as hardware, software, facilities, materials, and personnel), and any site-specific implementation requirements. The plan is developed during the Design Phase and is updated during the Development Phase; the final version is provided in the Integration and Test Phase and is used for guidance during the Implementation Phase. The outline shows the structure of the Implementation Plan.

1 INTRODUCTION

This section provides an overview of the information system and includes any additional information that may be appropriate.

1.1 Purpose

This section describes the purpose of the Implementation Plan. Reference the system name and identify information about the system to be implemented.

1.2 System Overview

This section provides a brief overview of the system to be implemented, including a description of the system and its organization.

1.2.1 System Description

This section provides an overview of the processes the system is intended to support. If the system is a database or an information system, provide a general discussion of the description of the type of data maintained and the operational sources and uses of those data.

1.2.2 System Organization

This section provides a brief description of system structure and the major system components essential to the implementation of the system. It should describe both hardware and software, as appropriate. Charts, diagrams, and graphics may be included as necessary.

1.3 Project References

This section provides a bibliography of key project references and deliverables that have been produced before this point in the project development.

1.4 Glossary

Provide a glossary of all terms and abbreviations used in the manual. If it is several pages in length, it may be placed in an appendix.

2 MANAGEMENT OVERVIEW

The subsequent sections provide a brief description of the implementation and major tasks involved in this section.

2.1 Description of Implementation

This section provides a brief description of the system and the planned deployment, installation, and implementation approach.

2.2 Points of Contact

In this section, identify the System Proponent, the name of the responsible organization(s), and titles and telephone numbers of the staff who serve as points of contact for the system implementation. These points of contact could include the Project Manager, Program Manager, Security Manager, Database Administrator, Configuration Management Manager, or other managers with responsibilities relating to the system implementation. The site implementation representative for each field installation or implementation site should also be included, if appropriate. List all managers and staff with whom the implementation must be coordinated.

2.3 Major Tasks

This section provides a brief description of each major task required for the implementation of the system. Add as many subsections as necessary to this section to describe all the major tasks adequately. The tasks described in this section are not site-specific, but generic or overall project tasks that are required to install hardware and software, prepare data, and verify the system. Include the following information for the description of each major task, if appropriate:

- What the task will accomplish
- Resources required to accomplish the task
- Key person(s) responsible for the task
- Criteria for successful completion of the task
- Examples of major tasks are the following:
 - Providing overall planning and coordination for the implementation
 - Providing appropriate training for personnel
 - Ensuring that all manuals applicable to the implementation effort are available when needed
 - Providing all needed technical assistance
 - Scheduling any special computer processing required for the implementation
 - Performing site surveys before implementation
 - Ensuring that all prerequisites have been fulfilled before the implementation date
 - Providing personnel for the implementation team
 - Acquiring special hardware or software
 - Performing data conversion before loading data into the system
 - Preparing site facilities for implementation

IMPLEMENTATION PLAN

2.4 Implementation Schedule

In this section, provide a schedule of activities to be accomplished during implementation. Show the required tasks (described in Section 2.3, Major Tasks) in chronological order, with the beginning and end dates of each task.

2.5 Security

If appropriate for the system to be implemented, include an overview of the system security features and requirements during the implementation.

2.5.1 System Security Features

In this section, provide an overview and discussion of the security features that will be associated with the system when it is implemented. It should include the primary security features associated with the system hardware and software. Security and protection of sensitive bureau data and information should be discussed, if applicable. Reference the sections of previous deliverables that address system security issues, if appropriate.

2.5.2 Security During Implementation

This section addresses security issues specifically related to the implementation effort, if any. For example, if LAN servers or workstations will be installed at a site with sensitive data preloaded on non-removable hard disk drives, address how security would be provided for the data on these devices during shipping, transport, and installation because theft of the devices could compromise the sensitive data.

3 IMPLEMENTATION SUPPORT

This section describes the support software, materials, equipment, and facilities required for the implementation, as well as the personnel requirements and training necessary for the implementation. The information provided in this section is not site-specific. If there are additional support requirements not covered by the subsequent sections, others may be added as needed.

3.1 Hardware, Software, Facilities, and Materials

In this section, list support software, materials, equipment, and facilities required for the implementation, if any.

3.1.1 Hardware

This section provides a list of support equipment and includes all hardware used for testing time implementation. For example, if a client/server database is implemented on a LAN, a network monitor or “sniffer” might be used, along with test programs, to determine the performance of the database and LAN at high-utilization rates. If the equipment is site-specific, list it in Section 4, Implementation Requirements by Site.

IMPLEMENTATION PLAN

3.1.2 Software

This section provides a list of software and databases required to support the implementation. Identify the software by name, code, or acronym. Identify which software is commercial off-the-shelf and which is State-specific. Identify any software used to facilitate the implementation process. If the software is site-specific, list it in Section 4.

3.1.3 Facilities

In this section, identify the physical facilities and accommodations required during implementation. Examples include physical workspace for assembling and testing hardware components, desk space for software installers, and classroom space for training the implementation staff. Specify the hours per day needed, number of days, and anticipated dates. If the facilities needed are site-specific, provide this information in Section 4, Implementation Requirements by Site.

3.1.4 Material

This section provides a list of required support materials, such as magnetic tapes and disk packs.

3.2 Personnel

This section describes personnel requirements and any known or proposed staffing requirements, if appropriate. Also describe the training, if any, to be provided for the implementation staff.

3.2.1 Personnel Requirements and Staffing

In this section, describe the number of personnel, length of time needed, types of skills, and skill levels for the staff required during the implementation period. If particular staff members have been selected or proposed for the implementation, identify them and their roles in the implementation.

3.2.2 Training of Implementation Staff

This section addresses the training, if any, necessary to prepare staff for implementing and maintaining the system; it does not address user training, which is the subject of the Training Plan. Describe the type and amount of training required for each of the following areas, if appropriate, for the system:

- System hardware/software installation
- System support
- System maintenance and modification

Present a training curriculum listing the courses that will be provided, a course sequence, and a proposed schedule. If appropriate, identify which courses particular types of staff should attend by job position description.

IMPLEMENTATION PLAN

If training will be provided by one or more commercial vendors, identify them, the course name(s), and a brief description of the course content.

If the training will be provided by State staff, provide the course name(s) and an outline of the content of each course. Identify the resources, support materials, and proposed instructors required to teach the course(s).

3.3 Performance Monitoring

This section describes the performance monitoring tool and techniques and how it will be used to help decide if the implementation is successful.

3.4 Configuration Management Interface

This section describes the interactions required with the Configuration Management (CM) representative on CM-related issues, such as when software listings will be distributed, and how to confirm that libraries have been moved from the development to the production environment.

4 IMPLEMENTATION REQUIREMENTS BY SITE

This section describes specific implementation requirements and procedures. If these requirements and procedures differ by site, repeat these subsections for each site; if they are the same for each site, or if there is only one implementation site, use these subsections only once. The “X” in the subsection number should be replaced with a sequenced number beginning with I. Each subsection with the same value of “X” is associated with the same implementation site. If a complete set of subsections will be associated with each implementation site, then “X” is assigned a new value for each site.

4.1 Site Name or identification for Site X

This section provides the name of the specific site or sites to be discussed in the subsequent sections.

4.1.1 Site Requirements

This section defines the requirements that must be met for the orderly implementation of the system and describes the hardware, software, and site-specific facilities requirements for this area.

Any site requirements that do not fall into the following three categories and were not described in Section 3, Implementation Support, may be described in this section, or other subsections may be added following Facilities Requirements below:

- **Hardware Requirements** - Describe the site-specific hardware requirements necessary to support the implementation (such as. LAN hardware for a client/server database designed to run on a LAN).
- **Software Requirements** - Describe any software required to implement the system (such as, software specifically designed for automating the installation process).

IMPLEMENTATION PLAN

- Data Requirements - Describe specific data preparation requirements and data that must be available for the system implementation. An example would be the assignment of individual IDs associated with data preparation.
- Facilities Requirements - Describe the site-specific physical facilities and accommodations required during the system implementation period. Some examples of this type of information are provided in Section 3.

4.1.2 Site implementation Details

This section addresses the specifics of the implementation for this site. Include a description of the implementation team, schedule, procedures, and database and data updates. This section should also provide information on the following:

- Team--If an implementation team is required, describe its composition and the tasks to be performed at this site by each team member.
- Schedule--Provide a schedule of activities, including planning and preparation, to be accomplished during implementation at this site. Describe the required tasks in chronological order with the beginning and end dates of each task. If appropriate, charts and graphics may be used to present the schedule.
- Procedures--Provide a sequence of detailed procedures required to accomplish the specific hardware and software implementation at this site. If necessary, other documents may be referenced. If appropriate, include a step-by-step sequence of the detailed procedures. A checklist of the installation events may be provided to record the results of the process.

If the site operations startup is an important factor in the implementation, then address startup procedures in some detail. If the system will replace an already operating system, then address the startup and cutover processes in detail. If there is a period of parallel operations with an existing system, address the startup procedures that include technical and operations support during the parallel cycle and the consistency of data within the databases of the two systems.

- Database--Describe the database environment where the software system and the database(s), if any, will be installed. Include a description of the different types of database and library environments (such as, production, test, and training databases).
- Include the host computer database operating procedures, database file and library naming conventions, database system generation parameters, and any other information needed to effectively establish the system database environment.
- Include database administration procedures for testing changes, if any, to the database management system before the system implementation.

IMPLEMENTATION PLAN

- Data Update--If data update procedures are described in another document, such as the operations manual or conversion plan, that document may be referenced here. The following are examples of information to be included:
 - Control inputs
 - Operating instructions
 - Database data sources and inputs
 - Output reports
 - Restart and recovery procedures

4.1.3 Back-Off Plan

This section specifies when to make the go/no go decision and the factors to be included in making the decision. The plan then goes on to provide a detailed list of steps and actions required to restore the site to the original, pre-conversion condition,

4.1.4 Post-Implementation Verification

This section describes the process for reviewing the implementation and deciding if it was successful. It describes how an action item list will be created to rectify any noted discrepancies. It also references the Back-Off Plan for instructions on how to back-out the installation, if, as a result of the post-implementation verification, a no-go decision is made.

INTEGRATION DOCUMENT

The integration document defines the activities necessary to integrate the software units and software components into the software item. The integration document contains an overview of the system, a brief description of the major tasks involved in the integration, the overall resources needed to support the integration effort. The plan is developed during the Development Phase and is updated during the Integration and Test Phase; the final version is provided in the Implementation Phase.

1 INTRODUCTION

This section provides an overview of the information system and includes any additional information that may be appropriate.

1.1 Purpose and Scope

This section describes the purpose and scope of the Integration Document. Reference the system name and identify information about the system to be integrated.

1.2 System Overview

This section provides a brief overview of the system to be integrated, including a description of the system and its organization. Describe the environment/infrastructure and how this unit or system will integrate into it. Include any risk involved and the mitigating procedures to reduce or eliminate that risk.

1.2.1 System Description

This section provides an overview of the processes the system is intended to support. If the system is a database or an information system, provide a general discussion of the description of the type of data maintained and the operational sources and uses of those data. Also include all interfaces to other units or systems.

1.2.2 Unit Description

This section provides an overview of the processes the unit (or module) is intended to support. If more than one unit is being integrated, provide descriptions of each unit in this section.

1.3 Project References

This section provides key project references and deliverables that have been produced before this point in the project development.

1.4 Glossary

Provide a glossary of all terms and abbreviations used in the document. If it is several pages in length, it may be placed in an appendix.

INTEGRATION DOCUMENT

2 MANAGEMENT OVERVIEW

The subsequent sections provide a brief description of the integration and major tasks involved in this section.

2.1 Description of Integration

This section provides a brief description of the system units and the integration approach.

2.2 Responsibilities

In this section, identify the System Proponent, the name of the responsible or issuing organization, and titles and telephone numbers of the staff who serve as points of contact for the system integration. It should also include who has approval authority for each unit of the system. If this activity is contracted out, list the names and phone numbers of the contractor responsible for the development and integration.

2.3 Activities and Tasks

This section provides a brief description of each major task required for the integration of the system. Also include a schedule for when these tasks are expected to be completed. Add as many subsections as necessary to this section to describe all the major tasks adequately. Include the following information for the description of each major task, if appropriate:

- a) What the task will accomplish
- b) Resources required to accomplish the task
- c) Key person(s) responsible for the task
- d) Criteria for successful completion of the task

Examples of major tasks are the following:

- a) providing overall planning and coordination for the integration
- b) providing appropriate training for personnel
- c) providing appropriate documentation on each unit for integration
- d) providing audit or review reports
- e) documented software unit and database
- e) establish software requirements
- f) establish test procedures
- g) conduct unit testing
- h) conduct qualification testing
- i) integrate units into system

3 INTEGRATION SUPPORT

This section describes the support software, materials, equipment, and facilities required for the integration, as well as the personnel requirements and training necessary for the integration.

INTEGRATION DOCUMENT

3.1 Resources and their Allocation

In this section, list all support software, materials, equipment, and facilities required for the integration. Describe the test environment and any resources needed. Describe the number of personnel needed and an estimate of the costs for them.

3.2 Training

This section addresses the training, if any, necessary to prepare for the integration and maintenance of the system; it does not address user training, which is the subject of the Training Plan. If contractors are performing the integration functions and activities, this may not be necessary. It however, State staff are performing these activities some training might be needed. List the course(s) needed by title, instructor and cost.

3.3 Testing

In this section, list all the test requirements for each unit. If more than one unit is being tested, include a description for each unit. Include the descriptions of the data included, procedures for testing, who is responsible for the testing and a schedule. This could be accomplished in one plan or several depending on the complexity of the unit being tested.

3.3.1 Change procedures and history

Include all changes made during the unit testing. This information should be included in the Configuration Management Plan and updated during the Development Phase.

MAINTENANCE MANUAL

Overview

The Maintenance Manual provides maintenance personnel with the information necessary to maintain the system effectively. The manual provides the definition of the software support environment, the roles and responsibilities of maintenance personnel, and the regular activities essential to the support and maintenance of program modules, job streams, and database structures.

In addition to the items identified for inclusion in the Maintenance Manual, additional information may be provided to facilitate the maintenance and modification of the system. Appendices to document various maintenance procedures standards, or other essential information may be added to this document as needed.

1 INTRODUCTION

This section provides general reference information regarding the Maintenance Manual. Whenever appropriate, additional information may be added to this section.

1.1 Purpose

In this section, describe the purpose of the manual and reference the system name and identifying information about the system and its programs.

1.2 Points of Contact

This section identifies the organization(s) responsible for system development maintenance, and use. This section also identifies points of contact (and alternate if appropriate) for the system within each organization.

1.3 Project Reference

This section provides a bibliography of key project references and deliverables produced during the information system development life cycle.

1.4 Glossary

Provide a glossary with definitions of all terms, abbreviations, and acronyms used in the manual. If the glossary is several pages in length, place it as an appendix.

2 SYSTEM DESCRIPTION

The subsequent sections provide an overview of the system to be maintained.

2.1 System Application

This section provides a brief description of the purpose of the system, the functions it performs, and the business processes that the system is intended to support. If the system is a database or an information system, include a general description of the type of data maintained, and the operational sources and uses of those data.

2.2 System Organization

In this section, provide a brief description of the system structure, major system components, and the functions of each major system component. Include charts, diagrams, and graphics as necessary.

2.3 Security

This section provides an overview of the system's security controls and the need for security and protection of sensitive data. For example, include information regarding procedures to log on/off of the system, provisions for the use of special passwords, access verification, and access statuses as appropriate.

2.4 System Requirements Cross-Reference

This section contains an exhibit that cross-references the detailed system requirements with the system design document and test plan. This document, also referred to as a trace ability matrix in other documents, assists maintenance personnel by tracing how the user requirements developed in the FRD are met in other products of the life cycle. Because this information is provided in the system design document, it may be appropriate to repeat or enhance that information in this section.

3 SUPPORT ENVIRONMENT

This section describes the operating and support environment for the system and program(s). Include a discussion of the equipment, support software, database characteristics, and personnel requirements for supporting maintenance of the system and its programs.

3.1 Equipment Environment

This section describes the equipment support environment including the development, maintenance, and target host computer environments. Describe telecommunications and facility requirements, if any.

3.1.1 Computer Hardware

This section discusses the computer configuration on which the software is hosted and its general characteristics. The section should also identify the specific computer equipment required to support software maintenance if that equipment differs from the host computer. For example, if software development and maintenance are performed on a platform that differs from the target host environment, describe both environments. Describe any miscellaneous computer equipment required in this section, such as hardware probe boards that perform hardware-based monitoring and debugging of software. Include any telecommunications equipment.

3.1.2 Facilities

This section describes the special facility requirements, if any, for system and program maintenance and includes any telecommunications facilities required to test the software.

3.2 Support Software

This section lists all support software - such as operating systems, transaction processing systems, and database management systems (DBMSs) - as well as software used for the maintenance and testing of the system. Include the appropriate version or release numbers, along with their documentation references, with the support software lists.

3.3 Database Characteristics

This section contains an overview of the nature and content of each database used by the system. Reference other documents for a detailed description, including the system design document as appropriate.

3.4 Personnel

This section describes the special skills required for the maintenance personnel. These skills may include knowledge of specific versions of operating systems, transaction processing systems, high-level languages, screen and display generators, DBMSs, testing tools, and computer-aided system engineering tools.

4 SYSTEM MAINTENANCE PROCEDURES

This section contains information on the procedures necessary for programmers to maintain the software.

4.1 Conventions

This section describes all rules, schemes, and conventions used within the system. Examples of this type of information include the following:

- System-wide labeling, tagging, and naming conventions for programs, units, modules, procedures, routines, records, files, and data element fields
- Procedures and standards for charts and listings
- Standards for including comments in programs to annotate maintenance modifications and changes
- Abbreviations and symbols used in charts, listings, and comments sections of programs

If the conventions follow standard programming practices and a standards document, that document may be referenced, provided that it is available to the maintenance team.

4.2 Verification Procedures

This section includes requirements and procedures necessary to check the performance of the system following modification or maintenance of the system's software components. Address the verification of the system-wide correctness and performance.

Present in detail, system-wide testing procedures. Reference the original development test plan if the testing replicates development testing. Describe the types and source(s) of test data in detail.

4.3 Error Conditions

This section describes all system-wide error conditions that may be encountered within the system, including an explanation of the source(s) of each error and recommended methods to correct each error.

4.4 Maintenance Software

This section references any special maintenance software and its supporting documentation used to maintain the system.

4.5 Maintenance Procedure

This section describes step-by-step, system-wide maintenance procedures, such as procedures for setting up and sequencing inputs for testing. In addition, present standards for documenting modifications to the system.

5 SOFTWARE UNIT MAINTENANCE PROCEDURES

For each software unit within the system, provide the information requested. If the information is identical for each of the software units it is not necessary to repeat it for each software unit. If the information in any of the areas discussed below is identical to information provided in Section 4, System Maintenance Procedures, for the system maintenance procedures, then reference that area. This section should contain the following:

- **Unit Name And Identification**—Provide the name or identification of each software unit that is a component of the system. Repeat the following information for each unit name.
- **Description**—Provide a brief narrative description of the software unit. Reference other sections within the life cycle that contains more detailed descriptive material.
- **Requirements Cross-Reference**—Include the detailed user requirements satisfied by this particular software unit. It may be a matrix that traces the system requirements from the FRU) through the system design document and test plan for the specific software units. Other life cycle documentation may be referenced as appropriate.
- **Conventions**—Describe all rules, schemes, and conventions used within the program. If this information is program-specific, provide that information here. If the conventions are all system-wide, discuss them Section 4. If the conventions follow standard programming practices and a standards document, that document may be referenced here.
- **Verification Procedures**—Include the requirements and procedures necessary to check the performance of the program following modification or maintenance and addresses the verification of program correctness, performance and detailed testing procedures. If the testing replicates development testing, it may be appropriate to reference the original development test plan.
- **Error Conditions**— Describe all program-specific error conditions that may be encountered provide an explanation of the source(s) of each error, and recommend methods to correct each error. If these error conditions are the same as the system-wide error conditions described in Section 4.3, Error Conditions. that section may be referenced here.

MAINTENANCE MANUAL

- Listings—Provide a reference to the location of the program listings.

OPERATIONS MANUAL

Overview

The Operations Manual provides computer control personnel and computer operators with a detailed operational description of the information system and its associated environments, such as machine room operations and procedures.

1 GENERAL

1.1 Introduction and Purpose

Describe the introduction and purpose of the Operations Manual, the name of the system to which it applies, and the type of computer operation.

1.2 Project References

List, at a minimum, the User Manual, Maintenance Manual, and other pertinent documentation.

1.3 Glossary

List any definitions or terms unique to this document or computer operation and subject to interpretation by the user of this document.

2 SYSTEM OVERVIEW

2.1 System Application

Provide a brief description of the system, including its purpose and uses.

2.2 System Organization

Describe the operation of the system by the use of a chart depicting operations and Inter-relationships.

2.3 Software Inventory

List the software units, to include name, identification, and security considerations. Identify software necessary to resume operation of the system in case of emergency.

2.4 Information Inventory

Provide information about data files and databases that are produced or referenced by the system.

2.4.1 Resource Inventory

List all permanent files and databases that are referenced, created, or updated by the system.

2.4.2 Report Inventor

List all reports produced by the system. Include report name and the software that generates it.

2.5 Processing Overview

Provide information that is applicable to the processing of the system. Include system restrictions, waivers of operational standards, and interfaces with other systems.

2.6 Communications Overview

Describe the communications functions and process of the system.

2.7 Security

Describe the security considerations associated with the system.

3 DESCRIPTION OF RUNS

3.1 Run Inventory

List the runs showing the software components, the job control batch file names, run jobs and purpose of each run if any portion of the system is run in batch mode. For online transaction-based processing, provide an inventory of all software components that must be loaded for the software system to be operational.

3.2 Run Sequence

Provide a schedule of acceptable phasing of the software system into a logical series of operations. If the system is a batch system, provide the execution schedule, which shows, at a minimum, the following:

- Job dependencies
- Day of week/month/date for execution
- Time of day or night (if significant)
- Expected run time in computer units

3.3 Diagnostic Procedures

Describe the diagnostic or error-detection features of the system, the purpose of the diagnostic features and the setup and execution procedures for any software diagnostic procedures.

3.4 Error Messages

List all error codes and messages with operator responses, as appropriate.

3.5 Run Descriptions

Provide detailed information needed to execute system runs. For each run include the information discussed in the subsequent sections.

3.5.1 Control Inputs

Describe all operator job control inputs - for example, starting the run, selecting run execution options, activating an online or transaction-based system, and running the system through remote devices, if appropriate.

3.5.2 Primary User Contact

Identify the user contact (and alternate if appropriate) for the system, including the person's name, organization, address, and telephone number.

3.5.3 Data Inputs

Describe the following if data input is required at production time:

- Who is responsible for the source data
- Format of data
- Data validation requirements
- Disposition of input source and created data

3.5.4 Output Reports

Identify the report names, distribution requirements, and any identifying numbers expected to be output from the run. Describe reports to be produced from the system run by other than standard means.

3.5.5 Restart/Recovery Procedures

Provide instructions by which the operator can initiate restart or recovery procedures for the run.

3.5.6 Backup Procedures

Provide instructions by which the operator can initiate backup procedures. Cross-reference applicable instructions with procedures in the contingency plan.

3.5.7 Problem Reporting/Escalation Procedure

Provide instructions for reporting problems to a point of contact. Include the person's name and phone numbers (that is, office, home, pager, etc.).

POST-IMPLEMENTATION REVIEW REPORT

POST-IMPLEMENTATION REVIEW REPORT

Overview

The Post-Implementation Review is used to evaluate the effectiveness of the system development after the system has been in production for a period of time (normally 6 months). The objectives are to determine if the system does what it is designed to do: Does it support the user as required in an effective and efficient manner? The review should assess how successful the system is in terms of functionality, performance, and cost versus benefits, as well as assess the effectiveness of the life-cycle development activities that produced the system. The review results can be used to strengthen the system as well as system development procedures.

The review is scheduled to follow the release of a system or system revision by an appropriate amount of time to allow determination of the effectiveness of the system. A representative from the functional development group or other member of the major user organization participates in the review. The System Proponent ensures that all documentation and all personnel needed to participate in the review are accessible.

The reviewer and an assigned team collect the information needed for the Post-Implementation Review by interviewing end users and their managers, system administrators, and computer operations personnel. The report is then prepared and provided to the user organization that requested it and the information systems organization, which may jointly use the findings to initiate other actions.

The Post-Implementation Review is a free-form report, and not all sections are relevant or necessary to the final product. A description of the Post-Implementation Review Report is attached.

1 INTRODUCTION

1.1 Project Identification

Provide the identifying information associated with the project, including the applicable project control code, system acronym, and system title.

1.2 System Proponent

Provide the name of the System Proponent.

1.3 History of the System

Briefly describe the system's history and predecessor, if any. State the mission needs and information requirements, including how the system is expected to help users.

Functional System Description and Data Usage

Briefly describe what the system does functionally and how the data are used by the system.

2 EVALUATION SUMMARY

The purpose of this section is to provide a summary of the overall adequacy and acceptance

POST-IMPLEMENTATION REVIEW REPORT

of the system.

2.1 General Satisfaction With the System

Describe the users' experience with the implemented system. Comments should address the following:

- The level of user satisfaction
- The strengths of the system, including specific areas of success
- Any problems
- Frequently used features
- Infrequently used features
- Features not used at all
- Suggested improvements

2.2 Current Cost-Benefit Justification

Assess if the system is paying for itself Base the assessment on the anticipated benefits and costs projected during the System Concept Development phase and revised during the subsequent phases of the systems development life cycle. This section is intended merely to review the costs and benefits and to provide details of costs and benefits in other sections. Comments should address the following:

- The extent of the benefits and if they are reported to be less or greater than those projected in the development analysis and functional requirements report
- If any difference is permanent or will change over time
- If the system is or will be cost-justifiable.

2.3 Needed Changes or Enhancements

Gauge the magnitude of effort needed to change or improve the system. Describe the nature and priority of the suggested changes~ more detail will be provided in other sections. Comments should address the following:

- The suggested changes
- The scope of the changes
- The resource requirements to effect the changes

3 ANALYSIS AND IMPLEMENTATION

The purpose of this section is to gauge the completeness of the functional requirements and implementation according to the study.

3.1 Purpose and Objectives

Evaluate the adequacy of the original definition of purpose and objectives presented in the functional requirements document and if the objectives were achieved during implementation. Evaluate if any objectives have changed or should have changed. Comments should address the following:

POST-IMPLEMENTATION REVIEW REPORT

- Extent to which goals were met
- The level of the objective definition
- Extent to which objectives were met
- Possible changes to the objectives

3.2 Scope

Analyze if proper limits were established in the feasibility study and if they were maintained during implementation. Comments should address the following:

- Variations from the scope definition as agreed to in the concept development
- The extent to which the scope was followed
- Any possible future changes to the scope

3.3 Benefits

Analyze if the benefits anticipated in the concept development and requirements definition analyses were realized. Detail all benefits, quantifiable or non-quantifiable, and any quantifiable resources associated with each. Comments should address the following:

- The adequacy of the benefit definition
- The level of benefits realized
- The anticipated benefits that can be realized
- The reason for the variance between planned and realized benefits

3.4 Development Cost

Determine the adequacy of the development cost estimated and any deviation between the estimated and actual development costs. Comments should address the following:

- The adequacy of the original and subsequent cost estimates
- The actual costs, by type
- The reasons for any difference between estimated and actual costs

3.5 Operating Cost

Analyze the adequacy of the operating cost estimates and any deviation between the estimate and the actual operating costs. Summarize the resources required to operate the system. Comments should address the following:

- The adequacy of the operating estimates
- The actual operating costs
- The difference

3.6 Training

Evaluate if all levels of user training were adequate and timely. Comments should address the following:

- The timeliness of the training provided
- The adequacy of the training

POST-IMPLEMENTATION REVIEW REPORT

- The appropriateness of the training
- Identification of additional training needs by job category
- The ability of the personnel to use the training provided

4 OUTPUTS

The purpose of this section is to evaluate the adequacy and usefulness of the outputs from the system. Care must be taken to ensure that all reports are evaluated.

4.1 Usefulness

Measure the extent to which the users need the output of the system. Comments should address identification of the level of need, such as the following:

- Utility
- Absolutely essential
- Important and highly desirable
- Interesting - proves what is already known
- Incomplete - does not provide all the necessary information
- Unnecessary
- Identification of information/reports needed but not currently generated by the system or unable to be obtained
- Demonstration of the ability to do without the reports
- Alternatives for obtaining the information where improvements can be achieved

4.2 Timeliness

Determine if output production performance meets user needs. Comments should address the frequency with which output arrives on time, early, and late; and the amount of follow-up needed to obtain the output.

4.3 Data Quality

Assess the need to provide for effective use of shared data to enhance performance and system interoperability. Comments should address data accuracy and data reliability.

5 SECURITY

The purpose of this section is to determine if the system provides adequate security of data and programs. In addition to access security, procedures for backup, recovery, and restart should be reviewed.

5.1 Data Protection

Determine if the security, backup, recovery, and restart capabilities adequately safeguard data, including master, transaction and source. Online systems naturally require special techniques (such as, transaction logging). Comments should address the following:

- The adequacy of the security, backup, recovery, and restart procedures
- The suggested changes
- The effort required to make the changes

POST-IMPLEMENTATION REVIEW REPORT

5.2 Disaster Recovery

Determine if appropriate files, programs, and procedures are established to enable recovery from a disaster resulting in the loss of data. Comments should address the following:

- The adequacy and currency of off site storage procedures
- The extent that procedures cover the following:
 - Master data
 - Transaction data
 - Source programs
 - Object programs
 - Documentation (such as, systems, operations, user manuals)
- The results of any adequacy-of-recovery test

5.3 Controls

Evaluate the adequacy of the controls on the database, source documents, transactions, and outputs of the system. Review each area thoroughly for financial controls and file control counts. Comments should address the following:

- The level of controls present in the entire system and on each component (such as, transaction and batch, and file)
- The adequacy of the controls, including the strengths and possible areas for improvement
- The amount of resources required, if any, to obtain improvements

5.4 Audit Trails

Review the ability to trace transactions through the system and the tie-in of the system to itself. Comments should address the following:

- The thoroughness of the audit trails
- The level of improvements necessary, if any
- The requirements of audit trails as outlined in the trusted criteria - such as, C2 requirements—if any

5.5 Allowed Access

Evaluate the adherence to restriction of access to data. State desired privacy criteria for the system then evaluate how the criteria have been followed up to this point. Comments should address the following:

- Established privacy criteria
- Recommended privacy criteria
- Adherence to and violations of privacy
- The cost of providing this level of privacy
- The potential effect on individuals if the privacy criteria are not followed

POST-IMPLEMENTATION REVIEW REPORT

6 COMPUTER OPERATIONS

The purpose of this section is to ascertain the current level of operational activities. Although the user point of view is primary to the Post-Implementation Review Report, the computer operations view is also important to investigate.

6.1 Control of Work Flow

Evaluate the user interface with the data processing organization. Investigate the submittal of source material, the receipt of outputs, and any problems getting work in, through, and out of computer operations. Comments should address the following:

- Any problems in accomplishing the work
- The frequency and extent of the problems
- Suggested changes
- The effort required to make the changes

6.2 Scheduling

Determine the ability of computer operations to schedule according to user needs and to complete scheduled tasks. Comments should address the following:

- Any problems in accomplishing the work
- The frequency and extent of the problems
- Suggested changes
- The effort required to make changes

6.3 User Interface

Analyze the usability of the system. The transaction throughput and error rate are included in this analysis. Comments should address the following:

- Volume of data processed (number of transactions)
- Number of errors made
- Frequency of problems with the interface
- Suggested changes
- Effort required to make the changes

6.4 Computer Processing

Analyze computer processing issues and problems. Some areas to review are as follows:

- The correct or incorrect use of forms and off line files
- The adequacy of instructions (such as, forms lineup and proper responses on the console)
- The extent of reruns, if any

6.5 Peak Loads

Assess the ability of the system to handle peak loads and to resolve backlogs when they

POST-IMPLEMENTATION REVIEW REPORT

occur. Any offloading that could be helpful should be investigated. Comments should address the following:

- The level of user satisfaction
- The adequacy of the response time (for online systems)
- The effect of delays on online and/or batch systems
- Suggested changes
- The effort required to make the changes

7 MAINTENANCE ACTIVITIES

The purpose of this section is to evaluate maintenance activity involving the system.

7.1 Activity Summary

Provide a summary of maintenance activity to date. Provide type, number of actions, and scope of changes required. Estimate a projected maintenance workload based on the findings of the review. Discuss the adequacy of maintenance efforts or if major enhancement/revision is required.

7.2 Maintenance Review

Review completed and pending changes to the system. Provide conclusions regarding the benefits to be achieved by completing recommended changes. Provide conclusions about the amount of maintenance required based on activity that has occurred to date.

7.3 System Maintenance

Discuss the system maintenance based on the design, types of changes required, documentation, and knowledge about the system (both user and technical personnel).

POST-TERMINATION REVIEW REPORT

POST-TERMINATION REVIEW REPORT

Overview

The Post-Termination Review shall be performed after the end of the Disposition Phase. This phase-end review shall be conducted within 6 months after disposition of the system. The Post-Termination Review Report documents the lessons learned from the shutdown and archiving of the terminated system.

The Post-Termination Review Report details the findings of the Disposition Phase review. It can be used to document and ensure that all functions have been performed to dispose of the system. This report can provide a checklist of activities completed to dispose of the system. It should include the details where to find all products and documentation that has been archived.

1 INTRODUCTION

This section provides a brief description of introductory material.

1.1 Purpose and Scope

This section describes the purpose and scope of the Disposition Plan. Reference the information system name and provide identifying information about the system-undergoing disposition.

1.2 Points of Contact

This section identifies the System Proponent. Provide the name of the responsible organization and staff (and alternates, if appropriate) who serve as points of contact for the system disposition. Include telephone numbers of key staff and organizations.

1.3 Project References

This section provides a bibliography of key project references and deliverables that have been produced before this point in the project development. These documents may have been produced in a previous development life cycle that resulted in the initial version of the system now undergoing disposition or may have been produced in subsequent enhancement efforts as appropriate.

1.4 Glossary

This section contains a glossary of all terms and abbreviations used in the plan. If it is several pages in length, it may be placed in an appendix.

2 LESSONS LEARNED

2.1 Data Disposition

This section describes what happened to the data from the old system. Explain any problems or mishaps that might have occurred during this phase.

POST-TERMINATION REVIEW REPORT

2.2 Software Disposition

This section describes what happened to the software from the old system. Explain any lessons learned from performing this task during the Disposition Phase.

2.3 Equipment Disposition

This section describes what happened to the equipment from the old system. Explain where it is located, or if it was excessed, the date it was excessed.

3 ARCHIVING

This section explains what happened to the old system. It could be a check off sheet or in report format.

3.1 Data

This section explains where the old data is stored. If the old data was incorporated into a new system, so state here.

3.2 Software

This section explains where the old software is located.

3.3 Hardware

This section explains where the old hardware is located. If the equipment has been excessed, provide the date it was excessed.

PROJECT MANAGEMENT CHARTER

PROJECT MANAGEMENT CHARTER

Overview

Each project will have a charter with the following elements. No project may be executed without a project management charter.

1 OFFICIAL DESIGNATION

Identify by name the Sponsor and Project Manager for the project, their position within the organization, and the source of authority for execution of the project.

2 PURPOSE AND OBJECTIVES

Develop a broad statement of the purpose of the project and delineate clear objectives for its accomplishment.

3 ORGANIZATION

Identify the planned organization for project management. Project management may involve an existing organization that already has an inherent support structure or may require the formation of a completely new organizational element, requiring the hiring and reassignment of many technical and business specialists.

4 DUTIES AND RESPONSIBILITIES

Provide a description of the duties and responsibilities for project execution. The delineation of duties and responsibilities should conform to the following: a) the Program Sponsor is the principle authority on matters regarding the expression of business needs, the interpretation of functional requirements language, and the mediation of issues regarding the priority, scope and domain of business requirement, and b) the Project Manager carries both the responsibility and accountability for project execution.

5 PROCESSES AND PROCEDURES

Provide a general description of plans to adapt, adopt, or create written processes and procedures for recurring project office activities including requirements management, project tracking, contractor management, verification and validation, quality assurance, change management, and risk management.

6 DELIVERABLES, RESPONSIBILITY AND ACTION

Provide a general description of the deliverables for the project, the delineation of responsible parties and the anticipated action each will be accountable for.

7 DATE CHARTER ADOPTED

The Charter establishes important time-bound accountability for project execution and management. The Charter must be dated and is in effect upon its adoption.

PROJECT MANAGEMENT PLAN

PROJECT MANAGEMENT PLAN

Overview

The Project Management Plan is prepared for all projects. It is one of several key project-planning documents that use a building-block approach to planning. It is a vehicle for documenting project scope, tasks, schedule, allocated resources, and interrelationships with other projects. It also provides details on the involved functional units, required job tasks, cost and schedule performance measurement, and milestone and review scheduling.

The Project Management Plan includes an acquisition plan to define how the needed resources will be obtained and when.

Revisions to the Project Management Plan occur at the end of each phase and as information becomes available. Software tools designed for work breakdown structures (WBS), Gantt charts, network diagrams, and activity detail reports are available and should be used to complete the project management plan. The size of the project management plan should be commensurate with the size and complexity of the systems development effort and should generally follow the outline attached.

1 INTRODUCTION

This section is a description of the project management plan purpose and scope.

1.1 Project Description

This section provides a description of the project in as much detail as is required to understand the nature of the project. Identify the project name and code, state the project's objective(s), and give the date the plan was finalized in the Planning Phase.

1.2 Project Background

This section describes why the project is important to the organization, its mission, and the capabilities the project will provide to the organization. Include any background or history that is important to understanding the project.

1.2.1 Project Development Strategy

This section provides an overview of the development strategy selected for the project. For example, this strategy might include prototyping the system, use of commercial off-the-shelf software, or conversion of an existing system from one hardware and software family to another.

1.2.2 Organization of the Project Plan

This section briefly describes the organization of the Project Management Plan.

1.3 Points of Contact

This section identifies the key points of contact for the project management plan, including the System Proponent and Project Manager. Identify any additional points of contact.

PROJECT MANAGEMENT PLAN

1.4 Project References

This section is a bibliography of key project references and deliverables produced before this point. For example, these references might include cost-benefit analyses, existing documentation describing internal processes, or existing documentation of the system if the project is a conversion.

1.5 Glossary

This section provides a glossary of all terms and abbreviations used in the plan. If the glossary is several pages in length, include it as an appendix.

2 ORGANIZATION AND RESPONSIBILITIES

This section should include the various organizations and staff titles, roles, and responsibilities involved in the development project. Describe team structures, reporting responsibilities and relationships, and guidelines for status reporting internally within the information Resources Management Office and externally for any contractor support. Also provide a roles and responsibilities matrix. Identify the following key organization components:

- Organization sponsor for the project
- Manager responsible for the day-to-day administration of the project (if different from the sponsor)
- Quality Assurance (QA) organization
- Configuration Management (CM) organization

3 PROJECT DESCRIPTION, SCHEDULE, AND RESOURCES

This section lists all tasks/activities to be completed within each phase of the project. If possible, use diagrams and tables (automated tools) to list the tasks and show any possible relationships among them. Repeat any subsection for each known task within the project.

This section should provide a detailed description of each task and its schedule, budget, and management. Also include an estimate of each software development phase-related work effort and deliverables.

Note: The actual structure of this subsection may be organized as best suits the project. For example, suppose the project has activities in the Requirements Definition and Design Phases. Sections 3.1, Project Work Breakdown Structure, through 3.7, Risk Management, could be repeated for each of these phases; or Sections 3.1 through 3.7 could be listed once, and subsections within those sections could address the two phases separately.

3.1 Project Work Breakdown Structure

This section describes the WBS required for the project. The WBS is a family-tree structure that relates to products produced and tasks performed at the various phases of the project life cycle. A WBS displays and defines the product(s) to be developed or produced and relates the elements of work~ (tasks) to be accomplished to each other and to the end product(s).

PROJECT MANAGEMENT PLAN

Typically, three levels of WBS are developed during the system development process Summary, Project, and Contract. A WBS Dictionary is also helpful for creating and recording the WBS elements.

3.1.1 Summary Work Breakdown Structure

This section describes the Summary WBS, a high-level WBS that covers the first three levels of the Project WBS. The Summary WBS is used for management presentations but is not used for detailed day-to-day project management. The structure of the Summary WBS may vary depending on the nature of the project.

3.1.2 Project Work Breakdown Structure

This section describes the Project WBS, the detailed WBS that is used for the day-to-day management of a project. The Project WBS includes all important products and work elements, or tasks, of the project, regardless of whether these tasks are performed by State personnel or by a contractor. The Project WBS may be modified, if necessary, during the life cycle. Work elements requiring more than 2 person weeks of calendar time should be subdivided until the largest bottom-level work element represents work that can be accomplished in an interval of at least 1 person week, but not more than 2 person weeks. This subdivision may appear to be arbitrary; however, the bottom-level work elements should focus on finite tasks performed by a single individual. When that is done, the application of standard productivity rates can generally predict the expected duration of the work element and eliminate wide variation in work element duration. For a software system development project, the structure of the Project WBS should also reflect the project life-cycle approach. The structure of the Project WBS may vary depending on the nature of the project and should be customized by the Project Manager to reflect the particular project and the particular path through the life cycle. For example, a full-scale initial information system development project and a software conversion process would be expected to have somewhat different WBS.

3.1.3 Contract Work Breakdown Structure

This section describes the Contract WBS (CWBS), a further breakdown of the contract-specific WBS that covers the products and work elements, or tasks, from the Project WBS that will be performed by a contractor. In addition to items derived from the Project WBS, the CWBS includes contractor-specific items that may not be reflected in the Project WBS. Depending on the nature of the project, the contractor may be responsible for a given part of the project development activities (such as QA), for a specific part of the development life cycle (such as the Requirements Definition phase), or for the entire development process. A preliminary CWBS may be specified in the acquisition plan. The contract line items, configuration items, contract work statement tasks, contract specification, and contractor responses will typically be expressed in terms of the preliminary CWBS.

3.1.4 Work Breakdown Structure Dictionary

A WBS Dictionary provides detailed descriptions of each WBS element. Each WBS Dictionary entry should contain a title that is the same as the WBS element it amplifies; a narrative describing the work represented by the element; the effort required (in person hours); the most likely duration (in calendar days); and references to any special skills or resources required to accomplish the work. WBS Dictionary entries should be completed

PROJECT MANAGEMENT PLAN

only for the lowest-level WBS elements. Create one or more WBS and a WBS dictionary and generate the output in the form of graphic charts.

3.2 Resource Estimates

This section should estimate, for each WBS element, the total amount of human resource effort required, by resource category. Use available tools to estimate, store, and output resource requirements per WBS element to use in the next component of the project plan.

3.3 Schedule

This section presents the project schedule.

Assumptions made about task duration, resource availability, milestones, constraints, and optimization criteria should be carefully documented.

Provide the schedule in the forms of Gantt charts, milestone tables, and deliverables and dates lists.

4 ACQUISITION PLAN

The Acquisition Plan shows how all government human resources, hardware, software, and telecommunications capabilities, along with contractor support services, are acquired during the life of the project and helps ensure that needed resources can be obtained and are available at the time they are needed. It includes a milestone schedule that lists activities for completion and deliverables to be produced with appropriate estimated completion dates. The following should be considered when submitting a request for hardware, software, and/or related services:

- Resources are consistent with applicable laws, regulations, and Agency and State policy and guidance.
- Acquisitions are consistent with Agency objectives and initiatives as defined in the Agency MFR and IT Master plans.
- Resources are obtained only in direct support of the Agency missions and programs of the acquiring office/organization.
- Acquisitions are not redundant or duplicative efforts resulting in wasted money, time, and resources.
- Resources represent the most efficient and cost-effective means of providing automated support.

The Acquisition Plan becomes critical after the functional requirements document has been approved. Several acquisitions may be needed to procure an entire system and will be a continuous part of the cycle. The Acquisition Plan is continuously updated. The Project Manager works directly with the Acquisition personnel to ensure the timely award of the needed resources.

PROJECT MANAGEMENT PLAN

4.1 Background and Objectives

4.1.1 Applicable Conditions

This section states all the significant conditions affecting the acquisition, including requirements for compatibility with existing or future systems or programs and any known cost, schedule, and capability or performance constraints.

4.1.2 Cost

This section sets forth the established cost goals for the acquisition and the rationale supporting them, and discusses related cost concepts to be employed, as indicated in the subsequent sections. In each subsection, discuss the type of funding that will be required,

4.1.3 Life-Cycle Cost

This section discusses how the life-cycle cost will be considered. If life-cycle cost is not used, this section explains why. This section also discusses, if appropriate, the cost model used to develop the life-cycle cost estimates. Life-cycle cost is the total cost to the Government of acquiring, operating, supporting, and disposing of the items being acquired.

4.1.4 Capability or Performance

This section specifies the required capabilities or performance characteristics of the products being acquired, and states how they are related to the need.

4.1.5 Delivery or Performance-Period Requirements

This section describes the basis for establishing delivery or performance-period requirements, and explains and provides reasons for any urgency resulting in concurrency of development or justifying other than hill and open competition.

4.1.6 Trade-Offs

This section discusses the expected consequences of trade-offs among the various cost, capability, performance, and schedule goals.

4.2 PLAN OF ACTION

4.2.1 Sources

This section indicates the prospective sources of products than can meet the need. It considers the required sources, including consideration of small businesses, small disadvantages businesses, and women-owned small business concerns. It addresses the results of market research and analysis and indicates their effect on the various elements of the plan.

PROJECT MANAGEMENT PLAN

4.2.2 Competition

This section describes how competition will be sought, promoted, and sustained throughout the course of the acquisition. If the acquisition will be other than a full and open competition, this section cites the authority for the deviation, discusses the basis for the application of the authority, identifies the sources, and discusses why full and open competition cannot be obtained. This section also identifies the major components of the subsystems, and describes how competition will be sought, promoted, and sustained for these components. This section also discusses how competition will be sought, promoted, and sustained for spares and repair parts. This includes an identification of the key logistic milestones, such as technical data delivery schedules and acquisition method coding conferences, which affect competition. Finally, if subcontract competition is feasible and desirable, this section describes how such subcontract competition will be sought, promoted, and sustained throughout the course of the acquisition, and how any known barriers to subcontract competition will be overcome.

4.2.3 Source Selection Procedures

This section discusses the source selection procedures for the acquisition, including the timing for submission and evaluation of proposals, and the relationship of evaluation factors to the attainment of the acquisition objectives.

4.2.4 Contracting Considerations

This section discusses, for each contract contemplated, the contract type selection: the use of multi-year contracting: options; or other special contracting methods: any special clauses, special solicitation provisions: if equipment will be acquired by lease or purchase, and why, and any other contracting considerations.

4.2.5 Budgeting and Funding

This section describes how budget estimates were derived, and discusses the schedule for obtaining adequate funds at the time they are required.

4.2.6 Product Descriptions

This section explains the choice of product description types to be used in the acquisition.

4.2.7 Management Information Requirements

This section discusses the management systems that will be used by the Government to monitor the contractor's effort.

4.2.8 Test and Evaluation

This section describes the test program of the contractor and the Government. It describes the test program for each major phase of a major system acquisition. If concurrent development/deployment is planned, this section discusses the extent of testing to be accomplished before production release.

PROJECT MANAGEMENT PLAN

4.2.9 Logistics Considerations

This section describes the assumptions determining contractor or agency support, initially and over the life of the acquisition, including contractor or agency maintenance and servicing and distribution of commercial items. It also describes the reliability, maintainability, and quality assurance requirements, including any planned use of warranties. It also describes the requirements for contractor data and data rights, their estimated cost, and the use to be made of the data. And, it describes standardization, including the necessity to designate technical equipment as “standard” so that future purchases of the equipment can be made from the same manufacturing source.

4.2.10 Government-Furnished Property

This section indicates the property to be furnished to contractors, including material and facilities, and discusses associated considerations, such as availability, or the schedule for its acquisition.

4.2.11 Government-Furnished Information

This section discusses any Government information, such as manuals, drawings, and test data, to be provided to prospective offerors and contractors.

4.2.12 Security Considerations

This section discusses, for acquisitions dealing with security-related matters, how adequate security will be established, maintained, and monitored.

4.2.13 Other Considerations

This section discusses, as applicable, other considerations and any other matters germane to the plan and not covered elsewhere.

4.2.14 Milestones for the Acquisition Cycle

This section addresses the following steps, and any others as appropriate: Acquisition Plan approval; completion of acquisition package preparation; justification and approval for sole source procurements; issuance of solicitation; evaluation of proposals; beginning and completion of negotiations; contract preparation, review, and clearance; and contract award.

4.2.15 Acquisition Plan Contacts

This section lists the individuals who participated in preparing the Acquisition Plan, and provides contact information for each.

5 COMMUNICATION PLAN

This section should discuss frequencies, target audiences, media, sources, formats, locations, forms, and types of information delivered in each form of communication. Careful thought should be given to satisfying existing standards and following existing conventions, and consideration should also be given to improving the communication process in general and to ensuring that communication is enabled and simplified for all project team members and

PROJECT MANAGEMENT PLAN

external entities. Periodic status reports, newsletters, bulletins, problem reports, issues lists, status and review meetings, team meetings, and other forms of communication should all be carefully considered and documented when creating the communication plan. Output the communication plan in the form of a communication item/audience matrix.

6 PROJECT STANDARDS AND PROCEDURES

While the estimating and scheduling activities are going on, assign members of the planning team to identify and document standards and procedures for the project team. These standards and procedures may already be in place Agency-wide, but, if not, they should be discovered and/or determined now. These include technical standards, business-related standards, and QA standards. Technical standards and procedures include such things as naming conventions, walk-through requirements, CM rules, security standards, documentation requirements, tools, modeling techniques, and technical contractual obligations. Business-related standards and procedures include such things as procedures for scope changes, requirements changes, costing, earned value implementation, and sign-off standards. QA standards and procedures include such things as review processes, testing procedures, and defect tracking requirements. QA may also provide standards on the use of metrics.

7 SECURITY AND PRIVACY

This section should review security and privacy requirements for the project and should ensure that the Project Plan reflects these requirements.

7.1 Privacy Issues

This section identifies privacy issues that should be addressed during the phases of the information system development effort and define the process to be established for addressing the privacy issues throughout the life cycle. It is important that there be a preliminary analysis of the potential privacy effects of the proposed information system. The purpose will be to establish for the project team and the review process an awareness of the privacy-related issues that will have to be addressed as the system is planned, developed, and implemented.

7.2 Computer Security Activities

This section reviews and evaluates requirements for security risk assessment and computer security planning to determine that all system vulnerabilities, threats, risks, and privacy issues will be identified and that an accurate determination will be made of the sensitivity of the system and information. Refer to the System Concept Development Phase, Requirements Definition Phase, and Design Phase for more information on security considerations.

RISK MANAGEMENT PLAN

Overview

The Risk Management Plan identifies the risks that can be defined at this stage of the life cycle, evaluates them, and outlines mitigation actions. This Plan will be periodically updated and expanded throughout the life cycle as the project increases in complexity and risks become more defined.

1 INTRODUCTION

1.1 Purpose

In this section, present a clear, concise statement of the purpose of the Risk Management (RM) plan. Include the name and code name of the project, the name(s) of the associated system(s), and the identity of the organization that is responsible for writing and maintaining the RM plan.

1.2 Background

This section briefly describes the history of the project and the environment in which the project will operate. (This information may be included through reference to other project documents.) Include the following information:

- Identification of other systems with which the subject system interfaces
- Contractor support for development and maintenance
- System architecture, operating system and application languages
- Development methodology and tools used for the project

1.3 Scope

This section presents a definitive statement of the scope of the RM planning contained in this document, including the limits and constraints of the RM plan.

1.4 Policy

Include in this section policy decisions that affect how RM is conducted. This section also lists documents that are referenced to support the RM process. Include any project or standards documents that are referenced in the body of the plan or that have been used in the development of the document.

1.5 Approach

In this section, describe the project's approach to risk management. Include the elements of identification, analysis, planning, tracking, control, and communications. Discuss the project's risk mitigation strategies in general and detail specific strategies that have significant impact across the project (e.g., parallel development, prototyping).

RISK MANAGEMENT PLAN

2 RISK IDENTIFICATION LIST

The tracking of risks in a risk identification list is a critical facet of successful system development management. The risk identification list is used from the beginning of the project and is a major source of input for the risk assessment activity. Following are examples of categories that may be a source of risk for a system development:

- The complexity, difficulty, feasibility, novelty, verifiability, and volatility of the system requirements
- The correctness, integrity, maintainability, performance, reliability, security, testability, and usability of the SDLC deliverables
- The developmental model, formality, manageability, measurability, quality, and traceability of the processes used to satisfy the customer requirements
- The communication, cooperation, domain knowledge, experience, technical knowledge, and training of the personnel associated with technical and support work on the project
- The budget, external constraints, politics, resources, and schedule of the external system environment
- The capacity, documentation, familiarity, robustness, tool support, and usability of the methods, tools, and supporting equipment that will be used in the system development

Once the risks have been identified, document them in this section as the risk identification list. Steps for developing the risk identification list are the following:

- Number each risk using sequential numbers or other identifiers.
- Identify the SDLC document in which the risk is applicable. For instance, if you are working on the CM plan and discover a CM risk, identify the CM plan as the related document.
- Describe the risk in enough detail that a third party who is unfamiliar with the project can understand the content and nature of the risk.

Use the risk identification list throughout the life-cycle phases to ensure that all risks are properly documented.

3 RISK ASSESSMENT

The project management plan and the risk identification list are inputs to the risk assessment. Categorize the risks as internal or external risks. Internal risks are those that you can control. External risks are events over which you have no direct control. Examples of internal risks are project assumptions that may be invalid and organizational risks. Examples of external risks are Government regulations and supplier performance.

RISK MANAGEMENT PLAN

Evaluate the identified risks in terms of probability and impact. For each risk item, determine the probability that this will occur and the resulting impact if it does occur.

Use an evaluation tool to score each risk. For example, a simplistic model could be:

Assign numerical scores to risk probability (1=low, 2=moderate, 3=high) and severity of impact (1=low, 2=moderate, 3=high). A risk score would be the product of the two scores. Management attention would then be focused on those risks with a score of 9, followed by 6, etc.

4 RISK ACTION PLAN

Review the risk items with high rankings from Section 3 and determine if the significant risks will be accepted, transferred, or mitigated. With the acceptance approach, no effort is made to avoid the risk item. This approach is usually employed because the risk items are the result of external factors over which you have no direct control. Two types of action are usually taken under the acceptance approach: contingency planning and no action. You can plan contingencies in case the risk does occur. Thus, the project team has a backup plan to minimize the effects of the risk event. Or you can take no action and accept responsibility if the risk event does indeed occur. With the transfer approach, the objective is to reduce risk by transferring it to another entity that can better bear it. Two methods of transferring risk are the use of insurance and the alignment of responsibility and authority. With the mitigation approach, emphasis is on actually avoiding, preventing, or reducing the risk. Some risks can be avoided by reducing the number of requirements or defining them more completely. For example, careful definition of the scope of a project in a TORFP can avoid the possible consequence of “scope creep,” or indecisive, protracted, and uncertain scope objectives.

In this section, identify and describe in detail the actions that will be taken to transfer or mitigate risks that are prioritized as high in Section 3. These actions should ultimately result in the reduction of project risk and should directly affect the project plan and the metrics used for the project. Activities for reducing the effects of risk will require effort, resources, and time just like other project activities. The actions need to be incorporated into the budget, schedule, and other project plan components. Update the project plan components to ensure the planning and execution of risk action activities. Also, refer to contingency plan documents for any contingency plans that have been identified with the risk acceptance approach. Risk action plans will be used to direct all risk mitigation activities. The RM plan will need to be monitored and updated throughout the life-cycle phases.

SECURITY RISK ASSESSMENT

SECURITY RISK ASSESSMENT

The Guidelines and template are located in the State Certification and Accreditation Guide.

SOFTWARE DEVELOPMENT DOCUMENT

SOFTWARE DEVELOPMENT DOCUMENT

Overview

The software development document contains all preparations pertaining to the development of each unit or module, including the software, test cases, test results, approvals, and any other items that will help to explain the functionality of the software. The document is dynamic and is maintained by the system development team and should be constantly updated as the system's development progresses. The software development folder should include the following information for each unit:

- *Description of the unit's functionality in narrative format*
- *Description of development methodologies used*
- *Requirements in the functional requirements document allocated to this unit or module*
- *Completed trace ability matrix displaying the unit's test cases satisfying the functional requirements in the test plan*
- *Source code listing*
- *Controlled libraries/directories/tables*
- *All data necessary to conduct unit testing*
- *Unit test results and analysis*
- *System Technical Lead sign off for design walk-through, approval of code, and completion of each unit*
- *Completed Software Development Document Check-Off sheet (attached)*

1 ROLES AND RESPONSIBILITIES

The team members have the following roles and responsibilities:

- The application developer assigned the primary responsibility for the module or unit creates a file folder for the unit, labels it according to the name of the unit, and places it in the appropriate place in the project team file cabinet.
- The application developer(s) add copies of the indicated documentation to the folder as they are created.
- The project QA representative reviews the contents of the folder for completeness, and points out discrepancies to the developer assigned primary responsibility for the module or unit.
- The developer assigned primary responsibility for the module or unit completes the Software Development Document Check-Off sheet and arranges for the System Technical Lead review and approval when needed.
- The folder is available to all project team member for review, but if removed from the file cabinet, it must be replaced with a check-out card indicating who checked it out, when, and where it will be located.

2 PROCESS

Fill out the following sections of the Check-Off sheet:

SOFTWARE DEVELOPMENT DOCUMENT

- **Requirements** - Place a checkmark to the left of each question when it is determined that the answer is “Yes.” This indicates that there is a match between the requirements trace ability matrix and the requirements addressed by this module.
- **Functionality** - Place a checkmark to the left of each question when it is determined that the answer is “Yes.” This indicates that a complete narrative description of the module’s functionality is available, that a walk-through of the module’s design was conducted before the start of the programming, and that System Technical Lead approval was granted to begin the programming work.
- **Source Code** - Place a checkmark to the left of the question when it is determined that a current copy of the program source listing has been placed in the folder.
- **Libraries, Directories, and Tables** - Place a checkmark to the left of the question when it is determined that the program source code and copybook libraries and associated electronic tables are identified, and copies, as needed are in the folder.
- **Development Methodologies** - Place a checkmark to the left of the question when it is determined that the programming methodology descriptions are all included in the folder.
- **Test Data** - Place a checkmark to the left of each question when it is determined that the location and identity of all needed unit test data are included in the folder.
- **Test Analysis** - Place a checkmark to the left of the question when it is determined that the unit has been thoroughly tested.
- **Sign-Off** - Date and sign the certification for completion of coding and unit testing for the module.

SOFTWARE DEVELOPMENT DOCUMENT

SOFTWARE DEVELOPMENT FOLDER CHECK-OFF SHEET

Requirements

- Has each requirement in the functional requirements document allocated to this unit been identified using the trace ability matrix?
- Have derived requirements found during the development of this unit been identified, justified, and put in the functional requirements document?

Functionality

- Is the functionality of this unit fully described?
- Is the description in narrative form?
- Was a design walk-through conducted?
- Was permission granted to begin programming?

Source Code

- Is the source code listing of the unit included in this folder?

Libraries, Directories, and Tables

- Are all coded entities included in the folder?

Development Methodologies

- Are all development methodologies for the development effort described in the folder?

Test Data

- Are all data necessary to conduct testing referenced in this folder?

Test Analysis

- Was the unit thoroughly tested and were all logical paths verified'?

SOFTWARE DEVELOPMENT DOCUMENT

System Developer

I certify that this software development document is complete, the unit _____ defined in this folder has successfully completed development and unit testing, and the unit is ready to be base lined and integrated into the system

Date _____

System Developer: _____

System Technical Lead Initials: _____

SYSTEM ADMINISTRATION MANUAL

SYSTEM ADMINISTRATION MANUAL

Overview

A System Administration Manual serves the purpose of an Operations Manual in distributed (client/server) applications.

1 GENERAL

1.1 Introduction and Purpose

This section introduces and describes the purpose of the Systems Administration Manual, the name of the system to which it applies, and the type of computer operation

1.2 Project References

This section lists, at a minimum, the User Manual, Maintenance Manual, and other pertinent available systems documentation.

1.3 Glossary

This section lists all definitions or terms unique to this document or computer operation and subject to interpretation by the user of this document.

2 SYSTEM OVERVIEW

2.1 System Application

This section provides a brief description of the system, including its purpose and uses.

2.2 System Organization

This section describes the organization of the system by the use of a chart depicting components and their interrelationships.

2.3 Information Inventory

This section provides information about data files, and the databases that are produced or referenced by the system.

2.3.1 Resource Inventory

This section lists all permanent tiles and databases that are referenced, created, or updated by the system.

2.3.2 Report Inventory

This section lists all reports produced by the system, including each report name and the software that generates it.

SYSTEM ADMINISTRATION MANUAL

2.4 Processing Overview

This section provides information that is applicable to the processing of the system. It includes system restrictions, waivers of operational standards, and interfaces with other systems.

2.5 Communications Overview

This section describes the communications functions and process of the system.

2.6 Security

This section describes the security considerations associated with the system.

3 SITE PROFILE(S)

This section contains information pertaining to the site(s) where the application is running. That information includes the information contained in the subsequent sections.

3.1 Site Location(s)

This is the official address(es) of the site(s).

3.2 Primary Site

For the site(s) designated as primary, this section describes the essential personnel names and phone numbers for the automated data processing site contacts.

4 SYSTEMS ADMINISTRATION

This section introduces the responsibilities of the System Administrator, as discussed in the subsequent sections.

4.1 User and Group Accounts

This section introduces topics related to system users.

4.1.1 Adding/Deleting Users

This section describes procedures to create/delete user logins and password accounts.

4.1.2 Setting User Permissions

This section describes procedures to give users/restrict access to certain files.

4.1.3 Adding/Deleting User Groups

This section contains procedures to create/delete user groups.

4.1.4 Setting User Roles/Responsibilities

This section describes the roles that are granted to each group or individual user(s).

SYSTEM ADMINISTRATION MANUAL

4.2 Server Administration

This section describes procedures to setup servers, including naming conventions and standards.

4.2.1 Creating Directories

This section describes procedures to create server directories, and a complete description of the existing directories.

4.2.2 Building Drive Mappings

This section describes procedures to create server drive mappings, and a complete description of the existing drive mappings.

4.3 System Backup Procedures

This section describes procedures for regularly scheduled backups of the entire network, including program and data storage, and the creation and storage of backup logs.

4.3.1 Maintenance Schedule (Daily, Weekly)

This section describes documented daily and weekly backup schedules and procedures. The procedures should include tape labeling, tracking, and rotation instructions.

4.3.2 Off-Site Storage Procedures

This section describes the location, schedule, and procedures for off-site storage.

4.3.3 Maintaining Backup Log

This section describes procedures for creating and maintaining backup logs.

4.4 Printer Support

This section discusses procedures for installing, operating, and maintaining printers.

4.4.1 Maintenance (Configurations, 'loner, Etc.)

This section describes maintenance contracts, procedures to include installation and configuration of printer drivers, and equipment information.

4.4.2 Print Jobs (Moving, Deleting, Etc.)

This section describes procedures to monitor, delete, and prioritize print jobs.

4.5 System Maintenance

This section discusses procedures for maintaining the file system.

4.5.1 Monitoring Performance and System Activity

This section contains procedures to monitor system usage, performance, and activity. This may include descriptions of system monitoring tools, the hours of peak demand, a list of system maintenance schedules, etc

SYSTEM ADMINISTRATION MANUAL

4.5.2 Installing Programs and Operating System Updates

This section includes procedures on how to install and test operating system updates. Once tested, instructions are to be provided to move/install the operating system updates to the operational environment

4.5.3 Maintaining Audit Records of System Operation

This section describes procedures for the setup and monitoring of the operating system and application audit trails.

4.5.4 Maintenance Reports

This section includes procedures to create and update maintenance reports.

4.6 Security Procedures

This section describes the process for obtaining identifications (IDs) and passwords. It includes information concerning network access and confidentiality requirements.

4.6.1 Issuing IDs and Passwords

This section describes procedures for issuing IDs and passwords for operating systems and applications

4.6.2 License Agreements

This section describes licensing agreements and procedures for ensuring that all licenses are current.

4.7 Network Maintenance

This section describes procedures to maintain and monitor the data communications network.

4.7.1 LAN Design

This section contains a layout of the network.

4.7.2 Communications Equipment

This section contains a layout of the telecommunications equipment.

4.8 Inventory Management

This section contains a complete hardware and software inventory to include make, model, version numbers, and serial numbers.

4.8.1 Maintaining Hardware and Software Configurations

This section describes procedures for maintaining the configuration information for the hardware and software actually installed.

SYSTEM ADMINISTRATION MANUAL

4.8.2 Maintaining Floor Plans

This section describes procedures for maintaining floor plans showing the location of all installed equipment and how to add/delete/modify the plans.

4.8.3 Installing Software/Hardware (New, Upgrades)

This section describes procedures for installing new or upgrading hardware and software.

4.8.4 Maintaining Lists of Serial Numbers

This section describes procedures for maintaining all serial number lists required at the site.

4.8.5 Maintain Property Inventory

This section describes procedures for maintaining a property inventory at the site.

4.9 Training Backup Administrator

This section describes how to train a backup administrator.

4.9.1 End-User Support - Procedures for Support and Contract Information

This section provides necessary end-user contract information and the procedures for providing end-user support.

4.9.2 Escalation Procedures

This section describes the formal escalation procedures to be used by System Administrators in response to priority user problem resolution requests.

4.10 Documentation

This section describes the documentation required of System Administrators as they perform system administration.

4.10.1 Troubleshooting Issues

This section describes how to conduct and document troubleshooting activities.

4.11 Database Maintenance

This section introduces the responsibilities as they relate to the database and software application maintenance.

4.11.1 Database User/Group Access

Describe who provides database access and the procedures for granting access.

4.11.2 Adding/Deleting Users to Database

Provide the responsible person who adds and deletes users to the database. Include the procedures for adding/deleting users.

SYSTEM ADMINISTRATION MANUAL

4.11.3 Setting User Permissions for Database

Provide the responsible person who sets the permissions for users on the database.

4.11.4 Adding/Deleting Groups for Database

Provide the procedures and responsible person for adding/deleting groups of individuals to the database.

4.11.5 Re-indexing Database

Provide the procedures and responsible person for re-indexing the database after changes have been made,

4.11.6 Packing/Compressing Database

Provide the procedures and responsible person for packing/compressing the database.

4.11.7 Data Entry/Modification/ Deletion

Provide the responsible person(s) who can make changes to the database. Include procedures for data entry, modifying, and deleting information from the database.

4.11.8 Database Reporting

Provide the responsible person(s) for database reporting. Include what reports are generated, time frames, due dates and storage of the reports.

4.11.9 Database Backup and Restore

Provide the person(s) responsible for performing database backup. This information should also be included in the Contingency Plan. Include procedures to follow if the database needed to be restored.

4.12 Application Maintenance

4.12.1 Application User/Group Access

Describe who provides application access and the procedures for granting access.

4.12.2 Adding/Deleting Application users

Provide the responsible person who adds and deletes users to the application. Include the procedures for adding/deleting users.

4.12.3 Setting User Application Permissions

Provide the responsible person who sets the permissions for users of the application.

4.12.4 Adding/Deleting Application Groups

Provide the procedures and responsible person for adding/deleting application groups.

SYSTEM ADMINISTRATION MANUAL

4.12.5 Procedures to Start and Stop the Application

Provide who has responsibility to start and stop the application. Include a rationale for stopping the application, and the steps to take to restart after identified problems are corrected.

4.12.6 Application Flow Chart

Provide a flow chart depicting how the information moves from the application to the database.

4.12.7 Description of Major Program or Sub-program Modules

Describe the processes within the application or module. If more than one module is operating for this system, describe each module.

SYSTEM BOUNDARY DOCUMENT

SYSTEM BOUNDARY DOCUMENT

Overview

The System Boundary Document (SBD) provides guidance on how to establish the boundaries of an information technology (IT) project. It establishes a formal agreement between the Executive Program Sponsor and the Agency CIO on the high-level requirements, costs and schedule for an IT project. It records management decisions to mitigate and to accept a level of risk in the business, technological and project management environments. System development projects frequently experience cost overruns and schedule slippages due to a variety of reasons, including changing requirements and poor resource and schedule estimating. While requirements, schedule and resource changes will occur at times, these changes must be managed and controlled. Documented system boundaries provide a tool for Agency management to use to provide this control.

The SBD is applicable to all State IT projects. The Project Manager prepares the SBD for approval by the Agency Program Sponsor, Agency CIO, and the State CIO. The SBD captures the business functions, goals and objectives that the IT project will satisfy. It also captures critical success factors, assumptions and constraints for the IT project as well as performance measures that provide criteria to judge whether the IT satisfied the business goals and objectives. The SBD shall be approved by the Agency Program Sponsor, Agency CIO, and the State CIO.

The primary criteria are:

- Do the requirements meet the business need?*
- Is it technically feasible to meet the requirements?*
- Are the cost and schedule estimates realistic?*

1 OVERVIEW

The SBD records the essential properties of the envisioned system early in its development and provides guidance on its achievement.

1.1 Purpose

Identify the system / project to which this SBD applies and the strategic goals and missions it will support.

1.2 Background

The SBD is meant to help senior executives communicate between themselves and reach consensus on what they intend to achieve by pursuing this effort, and why. Provide information in this section on previous decisions or previous system development projects that are relevant to understanding the current project.

2 MISSION

The strategic planning information in this section should refer to Agency strategic planning documents, such as the MFR Plans, the IT Master Plan, and the Enterprise Architecture.

SYSTEM BOUNDARY DOCUMENT

2.1 System Mission

Describe the mission for this system. Convey why this system is necessary for your organization. Relate the system mission to the State and/or Agency mission. The system mission will be discussed in terms of how it addresses the opportunities and deficiencies identified in the Concept Proposal.

2.2 Objectives

State the long-term business objectives expected to be achieved by using the system.

2.3 Goals

State any quantifiable targets that your component wishes to achieve, and the time frame for reaching them, as related to the proposed system. Goals must support one or more system objectives.

2.4 Critical Success Factors

Identify the critical factors for the system to be considered a success in achieving the business goals provided above. They are defined as conditions which must exist (or must be prevented). How will you know if this project is a success?

2.5 Performance Measures

For the business objectives above, describe how progress on their achievement will be measured and reported.

3 REQUIREMENTS STATEMENT

This section provides the preliminary documentation of functional and informational requirements based on the opportunities and deficiencies identified in the Concept Proposal.

3.1 Existing Methods and Procedures

This paragraph should provide a brief description of the current methods and procedures being employed to satisfy existing information requirements. Summarize the conclusions of any analysis that was performed on the ability of the existing system to satisfy the mission, objectives, goals, and critical success factors described above. Describe the products and services delivered to current customers.

3.2 Required Capabilities

3.2.1 Users' Functional Requirements

Describe user requirements in functional terms. The description should be in narrative form and written from the users' perspective. Graphical representations may be used if it helps the user express the requirements and their interrelationships. When a requirement is the improvement of existing methods and procedures, state the extent of anticipated improvement and the relationship to previously stated opportunities and deficiencies. Make sure that all of the functions included in the system are identified and that the functions are described in sufficient detail that an accurate estimate can be made of the resources required.

SYSTEM BOUNDARY DOCUMENT

3.2.2 Users' Information Needs

Describe user requirements in terms of the information needed to perform their functions. The description should be in narrative form and written from the users' perspective. A subject area diagram or high level entity relationship diagram may be used if this helps the user describe the kind of information required.

3.2.3 Sensitivity of Data

Describe the requirements for protecting sensitive data.

3.2.4 Network Requirements

Describe all potential network support requirements to include number of users, projected volumes and types of data to be exchanged and the frequency of data exchange. These estimates should show the order of magnitude of support required at a level of accuracy and detail comparable to the functional requirements and information needs.

3.2.5 Interface Requirements

Describe the proposed system's relationship with existing and other proposed systems. Include the purpose of the requirement for any interface.

3.2.6 Technical Framework

Describe the potential impact to the Agency or State infrastructure and the potential architectural and security implications.

4 BUSINESS ASSUMPTIONS AND CONSTRAINTS

4.1 Organizational Structure

Identify the potential impacts on the existing organizational structure. Identify constraints on the scope of change to the current organization. Discuss users, developers, maintainers, and any other organizational units affected by the system. Define all constraints that the new organizational structure may impose on the design and fielding of the system. Identify assumptions about who the users will be and where they will be physically located. Indicate any considerations for training, reassignment, etc.

4.2 Impact of Automation

Identify how automation impacts activities that are currently being performed. Discuss decisions and assumptions that partition functions between people and automation. This establishes guidance on the functions that require manual intervention and how automation should support them. Reference the rationale for these decisions, such as cost benefit or other reasons (union rules, re-training, computing limitations, etc.).

4.3 Legal

Discuss any legal considerations that may affect the system development or use, such as pending legislation.

SYSTEM BOUNDARY DOCUMENT

4.4 Security

Discuss any security considerations that may affect the system development or use.

4.5 Facility

Discuss any facility considerations that may affect the system development or use. The cost of acquiring a facility is part of the life cycle cost of an IT system.

5 SYSTEM ASSUMPTIONS AND CONSTRAINTS

5.1 Technology Impact Analysis

Summarize the conclusions from an analysis of the technological changes and state the preferred technological approach for the system. Reference any studies or actions taken to assure that the approach is feasible and can support the objective.

5.2 Acceptable Alternatives

State any explicit flexibility in the application of technological approaches that system designers should consider. Adaptation and growth of the system should be discussed.

5.3 System Upgrade

For a project which includes upgrade/improvement of existing systems, describe the following from an information technology perspective as they relate to the requirements stated in section 3, Requirements Statement: functional improvements (new capabilities); improvements of degree (upgrading existing capabilities); increased timeliness (decreased response or processing time); and the elimination or reduction of existing capabilities that are no longer needed.

6 FEASIBILITY ANALYSIS

6.1 Evaluation Criteria

This section states the criteria by which the alternatives will be evaluated. The criteria should make a distinction among characteristics that must be present in the system for it to be acceptable.

6.2 Alternative Descriptions

This section provides a description for each alternative proposed to handle the defined problem. It should describe the resources required, associated risk, system architecture, technology used, and the manual process flow for each alternative. The section should state at least two alternatives for each feasibility study - one being the alternative of doing nothing, if appropriate - and predict the anticipated benefits of each alternative and the likely effects of not taking action on the alternative. The section should also state benefits in terms of technical, operational, and economic feasibility.

6.2.1 Alternative Model

This section presents a high-level data flow diagram and logical data model, if possible, from current physical processes and data for the proposed system alternative.

SYSTEM BOUNDARY DOCUMENT

6.2.2 Description

This section states the required and desirable features, and provides a concise narrative of the effects of implementing this alternative.

6.3 Alternative Evaluation

This section provides a systematic comparison of the alternatives and documents potential problems resulting from the implementation of each.

6.4 Recommendation

This section provides a narrative that supports the recommended alternative program. The section should select the most advantageous program to implement the required functional capabilities based on the functional and technical concepts that satisfy the need. The information system should not be obtained at the price of inappropriate development risk or the loss of efficiency, capability, or capacity in the supported function.

7 PROGRAM MANAGEMENT ASSUMPTIONS AND CONSTRAINTS

7.1 Organizational Support

Identify assumptions and constraints about the level of support to be provided by the organizations within and external to the project team that will participate in the development effort. Reference the PM Charter, which in turn will reference any memorandums of understanding between these participants.

7.2 Budget

Identify assumptions and constraints affecting the funds available for the project. For example, the effect variances from projected fee collections could have on the project in future fiscal years, the effect of proposed changes to the budget, or the assumption that the system can be developed within the approved budget

7.3 Schedule

Identify externally imposed dates which affect the project. For example, the system will comply with legislation by xxxx date. Identify assumptions and constraints about tasks or events on the critical path of the project schedule.

7.4 Facility

Identify assumptions and constraints about physical facilities the project will have available for project use. Refer to agreements about sharing access to the operational space (i.e., third shift testing, office relocation, power, HVAC, etc.).

7.5 Acquisition

Identify any considerations for procurement activities for the system, including lead times and external/internal coordination.

7.6 Other Projects

Identify dependencies between this project and other development or modification projects

SYSTEM BOUNDARY DOCUMENT

which relate to this project. Refer to any Memoranda of Understanding between the projects' Project Managers or System Development Managers.

8 COST-BENEFIT ANALYSIS

8.1 Cost Analysis

The Cost Analysis presents the costs for design, development, installation, operation, maintenance and disposal, and consumables for the system to be developed. This profile is used to analyze the costs of the system for each year in its life cycle, so those costs can be weighed against the benefits derived from using it.

8.1.1 Cost Categories

The following table defines cost-related terms used in the Cost Analysis (the suggested line items may not be a complete list):

Terms and Definitions	Line Item
Nonrecurring Costs: Nonrecurring costs are developmental and capital investment costs incurred only once during the analysis, design, development and implementation of the system.	<ul style="list-style-type: none">• System development• Prototypes• Hardware purchase• Module design, development and integration• System installation
Recurring Costs: Recurring costs are incurred more than once throughout the life of the system and generally include operations and maintenance costs.	<ul style="list-style-type: none">• Operations and maintenance• Telecommunications• Supplies• Hardware and software upgrades, maintenance and licenses• Personnel travel and training

8.1.2 Project Cost Analysis

The costs for system design, development, installation, operations, and maintenance are presented in the table below. This section gives a brief explanation of the cost calculations for each year.

SYSTEM BOUNDARY DOCUMENT

Cost Analysis

	Alternative 1	Alternative 2	Alternative 3
Year One			
Nonrecurring costs			
Recurring costs			
Year Two			
Nonrecurring costs			
Recurring costs			
Year Three			
Nonrecurring costs			
Recurring costs			
Total Costs			

A detailed description of cost breakdowns should be developed to explain exactly how all cost calculations are presented. Discount rates should be applied where appropriate and documented as part of the explanation. If necessary, a line-by-line cost accounting should be presented if the analysis is placed under any scrutiny.

8.2 Benefit Analysis

This section analyzes the alternatives' individual ability to meet the goals of the project.

8.2.1 Key Benefit Terms

There are two key benefit terms that are used in this analysis – tangible and intangible benefits. Definitions for other terms used in this section may be found in Sections 11 and 12, Glossary and Acronyms.

- **Tangible benefits** – These benefits are expressed in dollars or in units. The result of tangible benefits may be: increased revenue, streamlined production, or saved time and money. For purposes of this analysis, tangible benefits should be expressed in dollar values so that a valid comparison can be made with costs.
- **Intangible benefits** – These benefits are expressed in terms of improved mission performance, improved decisions making, or more reliable or usable information. These benefits may be quantifiable, but cannot be expressed in dollar values. Many public goods and services are difficult to reliably and validly quantify in dollar units. However, intangible benefits are vital to understanding the total outcome of implementing a particular IT system.

8.2.2 Tangible Benefits

This section provides a detailed description of the tangible benefits. Because each alternative may not provide the same benefits, it is necessary to note which alternatives provide which benefits.

This section also describes, in detail, the source(s) of data used to quantify the benefit for

SYSTEM BOUNDARY DOCUMENT

each alternative and presents a chart that depicts the calculations for that benefit. It is important to provide sufficient documentation of data sources and calculations so that readers can follow the logic of the quantification of benefits.

The following tables outline a method for calculating tangible benefits as functions of transactions and personnel savings. These calculations are performed for each tangible benefit.

Tangible Benefit 1

Measurement		
Current Value	Alternative 1	Alternative 2
Savings		

Annual Transaction Savings (Based on Average Cost times Million Transactions per Annum)

Annual Transaction Times		
Current Value	Alternative 1	Alternative 2
Savings		

Personnel Cost Savings

Annual Transaction Times		
Current PINs (listed by cost as dollars per annum)	Alternative 1	Alternative 2
Total Cost		
Savings		

In a paragraph or two following the benefit description, each calculation should be explained and data sources should be cited for any data used. Each benefit should be calculated out for the number of projected years for each alternative. Benefits and costs for each alternative should be calculated for the same number of years to provide an accurate cost benefit comparison.

8.2.3 Summary of Tangible Benefits

The following table summarizes the quantifiable benefit value for each alternative.

Tangible Benefits

	Alternative 1	Alternative n
Benefit 1		
Benefit n		
Total Benefit		

The table below summarizes the tangible benefits described above. The first table shows the expected return from tangible benefits for three years, allowing for an accurate comparison with

SYSTEM BOUNDARY DOCUMENT

the three-year costs calculated above. These tables also illustrate a comparison of the tangible benefits for each alternative as well as each technology solution as part of each alternative.

Summary of Project Tangible Benefits – Expected Return

Tangible Benefit 1				
	FY__	FY__	FY__	Total
Alternative 1				
Alternative n				
Tangible Benefit n				
	FY__	FY__	FY__	FY__
Alternative 1				
Alternative n				
TOTAL BENEFITS				
	FY__	FY__	FY__	FY__
Alternative 1				
Alternative n				

If any of the alternatives do not provide one of the benefits, be sure to indicate this by placing a zero in the box and providing a brief explanation of why.

8.2.4 Intangible Benefits

Although no quantifiable dollar value has been placed on these benefits, if data becomes available in the future, it will be possible to quantify some of these intangible benefits. The intangible benefits for each alternative may wither be the same of different. It is important to include all intangible benefits.

Intangible Benefits Alternative 1

Intangible Benefits	Description
Intangible Benefit 1	
Intangible Benefit n	

Intangible Benefits Alternative n

Intangible Benefits	Description
Intangible Benefit 1	
Intangible Benefit n	

For each alternative, include a table in the same format as those shown above.

8.2.5 Summary of Intangible Benefits

The following table summarizes the values of intangible benefits.

SYSTEM BOUNDARY DOCUMENT

Summary of Intangible Benefits – Expected Return

Intangible Benefits	Alternative 1	Alternative n
Intangible Benefit 1		
Intangible Benefit n		

This table should be used to indicate if an alternative provides an intangible benefit for comparison purposes. A checkmark can be placed in each alternative box that does provide the particular benefit. It should be noted that if a tangible benefit can be valued in unit terms but cannot be valued in dollars, the unit valuation should be presented in some manner and the alternatives should be ranked for that intangible alternative.

8.3 Comparison of Costs and Benefits for Project

This section compares the costs and benefits for the project. The first part of the comparison examines the tangible benefits and the second part examines intangible benefits. The purpose of this comparison is to identify if tangible and intangible benefits outweigh the total cost of the system.

8.3.1 Results of the Comparison for Project— Tangible Benefits

The following table compares the costs and tangible benefits of the project.

Project Cost to Tangible Benefit Comparison

	Alternative 1	Alternative n
Total Tangible Benefits		
Total Costs		
Difference Between Costs and Benefits		

8.3.2 Results of the Comparison for Project— Intangible Benefits

The following table compares the intangible benefits of the Project.

Intangible Benefit Comparison – Expected Return

	Alternative 1	Alternative n
Intangible Benefits		

8.3.3 Conclusion

As with any investment analysis, it is important to note that any changes in program assumptions, conditions, or constraints should drive a reassessment of the analysis to reevaluate the effects of these changes.

SYSTEM BOUNDARY DOCUMENT

8.4 Sensitivity Analysis

A sensitivity analysis assesses the potential effect on inputs (costs) and outcomes (benefits) that depends on the relative magnitude of change in certain factors or assumptions. A change in any factor (that is, area of uncertainty) can necessitate a revision to the cost-benefit projections or can influence system performance outcomes. This section examines key sources of uncertainty in the operational environment of the Project and what it is going to do. This may also rank the alternatives and see how sensitive they are to basic assumptions or externalities (political, social, and environmental). After costs and benefits are determined for each alternative, the alternatives are ranked and a sensitivity analysis is performed.

8.4.1 Key Sources of Uncertainty

The following table lists the key factors that have implications for the Project. Projected costs and benefits could change depending on the extent of change in these factors.

Sensitivity Results			
Key Sources of Uncertainty	Extent of Impact	Nature of Impact	Implications

8.4.2 Sensitivity Results

Each of the key sources of uncertainty could have an effect on the benefits and costs of the project. The effect of each source of uncertainty is discussed in this subsequent section.

8.5 Results of the Analysis

The project CBA results are based on the work described in the previous sections. This work assesses the costs and benefits, both tangible and intangible, of the project and what it will do. The sensitivity of its costs and benefits to key sources of uncertainty are described in Section 8, Sensitivity Analysis. This section should list what the system will provide the agency. It should also discuss how well each alternative will achieve the goals of the system in context to the relative cost of that alternative. No specific recommendation should be made. Any CBA should be used by decision makers as a tool in conjunction with other studies and factors to determine the most appropriate investment choice for the agency to achieve its mission.

9 PROJECT COST, SCHEDULE, AND PERFORMANCE

This section establishes the Agency commitment to the schedule, funding and cost, and performance metrics for the project.

9.1 Schedule

Provide the major milestones and dates for the project. Specify the dates as a range if appropriate.

SYSTEM BOUNDARY DOCUMENT

9.2 Approved Budget

State the approved budget for the life of the project by fiscal year. Indicate the different accounts (capital fund, general fund, federal funds, etc.) which are providing funds to the project.

9.3 Project Life Cycle Cost Estimate (LCCE)

State the estimated project LCCE by fiscal year broken down into cost categories. The major cost categories are: personnel, COTS components of the IT (hardware and software), infrastructure components, facilities, and supplies/materials. Personnel costs shall show State component staff and contractors separately and be broken down into work breakdown structure (WBS) elements suitable for the investment.

9.4 Performance

State the measurable performance improvements anticipated from this project. Performance measures should be based on a stated period of time so that progress over time can be demonstrated. Examples might include system response times for the public/users, system availability, number of criminals denied access to guns due to data in the system, application processing times, etc.

9.5 Project Risks

Discuss potential risks and the reasonableness/acceptability of the costs of these risks, their probability, their costs, and the mitigation strategies. Indicate if the cost figures have been adjusted to accommodate the risk calculations.

9.6 Return on Investment

Discuss if the quantitative and non-quantitative measures used to indicate that the investment will provide a justifiable return relative to the investment level required. Indicate what quantitative and non-quantitative measures of valuation have been used to determine the return-on-investment (ROI) to the organization.

9.7 Affordability

Explain how the component organization will support this investment in light of other priorities.

10 REFERENCES

List each source of information used to prepare this SBD. Include documents (indicate parts that are applicable), meeting minutes, interviews, management reports, analysis of existing or future situations, and any other source as necessary to assure that statements within this document can be validated.

11 GLOSSARY

Provide a list of all system-specific terms and their definitions as used in this document.

12 ACRONYMS

Provide a list of all acronyms used in this document

SYSTEM DESIGN DOCUMENT

Overview

The System Design Document describes the system requirements, operating environment, system and subsystem architecture, files and database design, input formats, output layouts, human-machine interfaces, detailed design, processing logic, and external interfaces.

1 INTRODUCTION

1.1 Purpose and Scope

This section provides a brief description of the Systems Design Document's purpose and scope.

1.2 Project Executive Summary

This section provides a description of the project from a management perspective and an overview of the framework within which the conceptual system design was prepared. If appropriate, include the information discussed in the subsequent sections in the summary.

1.2.1 System Overview

This section describes the system in narrative form using non-technical terms. It should provide a high-level system architecture diagram showing a subsystem breakout of the system, if applicable. The high-level system architecture or subsystem diagrams should, if applicable, show interfaces to external systems. Supply a high-level context diagram for the system and subsystems, if applicable. Refer to the requirements traceability matrix (RTM) in the Functional Requirements Document (FRD), to identify the allocation of the functional requirements into this design document.

1.2.2 Design Constraints

This section describes any constraints in the system design (reference any trade-off analyses conducted such, as resource use versus productivity, or conflicts with other systems) and includes any assumptions made by the project team in developing the system design.

1.2.3 Future Contingencies

This section describes any contingencies that might arise in the design of the system that may change the development direction. Possibilities include lack of interface agreements with outside agencies or unstable architectures at the time this document is produced. Address any possible workarounds or alternative plans.

1.3 Document Organization

This section describes the organization of the Systems Design Document.

1.4 Points of Contact

This section provides the organization code and title of the key points of contact (and

SYSTEM DESIGN DOCUMENT

alternates if appropriate) for the information system development effort. These points of contact should include the Project Manager, System Proponent, User Organization, Quality Assurance (QA) Manager, Security Manager, and Configuration Manager, as appropriate.

1.5 Project References

This section provides a bibliography of key project references and deliverables that have been produced before this point.

1.6 Glossary

Supply a glossary of all terms and abbreviations used in this document. If the glossary is several pages in length, it may be included as an appendix.

2 SYSTEM ARCHITECTURE

In this section, describe the system and/or subsystem(s) architecture for the project. References to external entities should be minimal, as they will be described in detail in Section 6, External Interfaces.

2.1 System Hardware Architecture

In this section, describe the overall system hardware and organization. Include a list of hardware components (with a brief description of each item) and diagrams showing the connectivity between the components. If appropriate, use subsections to address each subsystem.

2.2 System Software Architecture

In this section, describe the overall system software and organization. Include a list of software modules (this could include functions, subroutines, or classes), computer languages, and programming computer-aided software engineering tools (with a brief description of the function of each item). Use structured organization diagrams/object-oriented diagrams that show the various segmentation levels down to the lowest level. All features on the diagrams should have reference numbers and names. Include a narrative that expands on and enhances the understanding of the functional breakdown. If appropriate, use subsections to address each module.

Note: The diagrams should map to the FRD data flow diagrams, providing the physical process and data flow related to the FRD logical process and data flow.

2.3 Internal Communications Architecture

In this section, describe the overall communications within the system; for example, LANs, buses, etc. Include the communications architecture(s) being implemented, such as X.25, Token Ring, etc. Provide a diagram depicting the communications path(s) between the system and subsystem modules. If appropriate, use subsections to address each architecture being employed.

Note: The diagrams should map to the FRD context diagrams.

SYSTEM DESIGN DOCUMENT

3 FILE AND DATABASE DESIGN

Interact with the Database Administrator (DBA) when preparing this section. The section should reveal the final design of all database management system (DBMS) files and the non-DBMS files associated with the system under development. Additional information may add as required for the particular project. Provide a comprehensive data dictionary showing data element name, type, length, source, validation rules, maintenance (create, read, update, delete (CRUD) capability), data stores, outputs, aliases, and description. Can be included as an appendix.

3.1 Database Management System Files

This section reveals the final design of the DBMS files and includes the following information, as appropriate (refer to the data dictionary):

- Refined logical model; provide normalized table layouts, entity relationship diagrams, and other logical design information
- A physical description of the DBMS schemas, sub-schemas, records, sets, tables, storage page sizes, etc.
- Access methods (such as indexed, via set, sequential, random access, sorted pointer array, etc.)
- Estimate of the DBMS file size or volume of data within the file, and data pages, including overhead resulting from access methods and free space
- Definition of the update frequency of the database tables, views, files, areas, records, sets, and data pages; estimate the number of transactions if the database is an online transaction-based system

3.2 Non-Database Management System Files

In this section, provide the detailed description of all non-DBMS files and include a narrative description of the usage of each file—including if the file is used for input, output, or both; if this file is a temporary file; an indication of which modules read and write the file, etc.; and file structures (refer to the data dictionary). As appropriate, the file structure information should:

- Identify record structures, record keys or indexes, and reference data elements within the records
- Define record length (fixed or maximum variable length) and blocking factors
- Define file access method—for example, index sequential, virtual sequential, random access, etc.
- Estimate the file size or volume of data within the file, including overhead resulting from file access methods
- Define the update frequency of the file; if the file is part of an online transaction-based system, provide the estimated number of transactions per unit time, and the statistical mean, mode, and distribution of those transactions

4 HUMAN-MACHINE INTERFACE

This section provides the detailed design of the system and subsystem inputs and outputs

SYSTEM DESIGN DOCUMENT

relative to the user/operator. Any additional information may be added to this section and may be organized according to whatever structure best presents the operator input and output designs. Depending on the particular nature of the project, it may be appropriate to repeat these sections at both the subsystem and design module levels. Additional information may be added to the subsections if the suggested lists are inadequate to describe the project inputs and outputs.

4.1 Inputs

This section is a description of the input media used by the operator for providing information to the system; show a mapping to the high-level data flows described in Section 1.2.1, System Overview. For example, data entry screens, optical character readers, bar scanners, etc. If appropriate, the input record types, file structures, and database structures provided in Section 3, File and Database Design, may be referenced. Include data element definitions, or refer to the data dictionary.

Provide the layout of all input data screens or graphical user interfaces (GUIs) (for example, windows). Provide a graphic representation of each interface. Define all data elements associated with each screen or GUI, or reference the data dictionary.

This section should contain edit criteria for the data elements, including specific values, range of values, mandatory/optional, alphanumeric values, and length. Also address data entry controls to prevent edit bypassing.

Discuss the miscellaneous messages associated with operator inputs, including the following:

- Copies of form(s) if the input data are keyed or scanned for data entry from printed forms
- Description of any access restrictions or security considerations
- Each transaction name, code, and definition, if the system is a transaction-based processing system

4.2 Outputs

This section describes of the system output design relative to the user/operator; show a mapping to the high-level data flows described in Section 1.2.1. System outputs include reports, data display screens and GUIs, query results, etc. The output files are described in Section 3 and may be referenced in this section. The following should be provided, if appropriate:

- Identification of codes and names for reports and data display screens
- Description of report and screen contents (provide a graphic representation of each layout and define all data elements associated with the layout or reference the data dictionary)
- Description of the purpose of the output, including identification of the primary users
- Report distribution requirements, if any (include frequency for periodic reports)
- Description of any access restrictions or security considerations

SYSTEM DESIGN DOCUMENT

5 DETAILED DESIGN

This section provides the information needed for a system development team to actually build and integrate the hardware components, code and integrate the software modules, and interconnect the hardware and software segments into a functional product. Additionally, this section addresses the detailed procedures for combining separate COTS packages into a single system. Every detailed requirement should map back to the FRD, and the mapping should be presented in an update to the RTM and include the RTM as an appendix to this design document.

5.1 Hardware Detailed Design

A hardware component is the lowest level of design granularity in the system. Depending on the design requirements, there may be one or more components per system. This section should provide enough detailed information about individual component requirements to correctly build and/or procure all the hardware for the system (or integrate COTS items).

If there are many components or if the component documentation is extensive, place it in an appendix or reference a separate document. Add additional diagrams and information, if necessary, to describe each component and its functions, adequately. Industry-standard component specification practices should be followed. For COTS procurements, if a specific vendor has been identified, include appropriate item names. Include the following information in the detailed component designs (as applicable):

- Power input requirements for each component
- Signal impedances and logic states
- Connector specifications (serial/parallel, 11-pin, male/female, etc.)
- Memory and/or storage space requirements
- Processor requirements (speed and functionality)
- Graphical representation depicting the number of hardware items (for example, monitors, printers, servers, I/O devices), and the relative positioning of the components to each other
- Cable type(s) and length(s)
- User interfaces (buttons, toggle switches, etc.)
- Hard drive/floppy drive/CD-ROM requirements
- Monitor resolution

5.2 Software Detailed Design

A software module is the lowest level of design granularity in the system. Depending on the software development approach, there may be one or more modules per system. This section should provide enough detailed information about logic and data necessary to completely write source code for all modules in the system (and/or integrate COTS software programs).

If there are many modules or if the module documentation is extensive, place it in an appendix or reference a separate document. Add additional diagrams and information, if necessary, to describe each module, its functionality, and its hierarchy. Industry-standard module specification practices should be followed. Include the following information in

SYSTEM DESIGN DOCUMENT

the detailed module designs:

- A narrative description of each module, its function(s), the conditions under which it is used (called or scheduled for execution), its overall processing, logic, interfaces to other modules, interfaces to external systems, security requirements, etc.; explain any algorithms used by the module in detail
- For COTS packages, specify any call routines or bridging programs to integrate the package with the system and/or other COTS packages (for example, Dynamic Link Libraries)
- Data elements, record structures, and file structures associated with module input and output
- Graphical representation of the module processing, logic, flow of control, and algorithms, using an accepted diagramming approach (for example, structure charts, action diagrams, flowcharts, etc.)
- Data entry and data output graphics; define or reference associated data elements; if the project is large and complex or if the detailed module designs will be incorporated into a separate document, then it may be appropriate to repeat the screen information in this section
- Report layout

5.3 Internal Communications Detailed Design

If the system includes more than one component there may be a requirement for internal communications to exchange information, provide commands, or support input/output functions. This section should provide enough detailed information about the communication requirements to correctly build and/or procure the communications components for the system. Include the following information in the detailed designs (as appropriate):

- The number of servers and clients to be included on each area network
- Specifications for bus timing requirements and bus control
- Format(s) for data being exchanged between components
- Graphical representation of the connectivity between components, showing the direction of data flow (if applicable), and approximate distances between components; information should provide enough detail to support the procurement of hardware to complete the installation at a given location
- LAN topology

6 EXTERNAL INTERFACES

External systems are any systems that are not within the scope of the system under development, regardless whether the other systems are managed by the State or another agency. In this section, describe the electronic interface(s) between this system and each of the other systems and/or subsystem(s), emphasizing the point of view of the system being developed.

6.1 Interface Architecture

In this section, describe the interface(s) between the system being developed and other

SYSTEM DESIGN DOCUMENT

systems; for example, batch transfers, queries, etc. Include the interface architecture(s) being implemented, such as wide area networks, gateways, etc. Provide a diagram depicting the communications path(s) between this system and each of the other systems, which should map to the context diagrams in Section 1.2.1. If appropriate, use subsections to address each interface being implemented.

6.2 Interface Detailed Design

For each system that provides information exchange with the system under development, there is a requirement for rules governing the interface. This section should provide enough detailed information about the interface requirements to correctly format, transmit, and/or receive data across the interface. Include the following information in the detailed design for each interface (as appropriate):

- The data format requirements; if there is a need to reformat data before they are transmitted or after incoming data is received, tools and/or methods for the reformat process should be defined
- Specifications for hand-shaking protocols between the two systems; include the content and format of the information to be included in the hand-shake messages, the timing for exchanging these messages, and the steps to be taken when errors are identified
- Format(s) for error reports exchanged between the systems; should address the disposition of error reports; for example, retained in a file, sent to a printer, flag/alarm sent to the operator, etc.
- Graphical representation of the connectivity between systems, showing the direction of data flow
- Query and response descriptions

If a formal Interface Control Document (ICD) exists for a given interface, the information can be copied, or the ICD can be referenced in this section.

7 SYSTEM INTEGRITY CONTROLS

Sensitive systems use information for which the loss, misuse, modification of, or unauthorized access to that information could affect the conduct of State programs, or the privacy to which individuals are entitled.

Developers of sensitive State systems are required to develop specifications for the following minimum levels of control:

- Internal security to restrict access of critical data items to only those access types required by users
- Audit procedures to meet control, reporting, and retention period requirements for operational and management reports
- Application audit trails to dynamically audit retrieval access to designated critical data
- Standard Tables to be used or requested for validating data fields
- Verification processes for additions, deletions, or updates of critical data

SYSTEM DESIGN DOCUMENT

- Ability to identify all audit information by user identification, network terminal identification, date, time, and data accessed or changed.

TEST ANALYSIS APPROVAL DETERMINATION

TEST ANALYSIS APPROVAL DETERMINATION

Overview

The Test Analysis Approval Determination (TAAD) form is completed immediately following the completion of testing (for all testing levels above the Integration test) for software to be delivered to the State. This form briefly summarizes the perceived readiness by the test engineer for delivery of the software to the next test phase. In the case of User Acceptance Test, it serves as the user's recommendation for fielding the software release or migration to production.

The TAAD is to be initiated by the testing organization and addressed to the Agency CIO. The form is signed by the responsible test engineer and supervisor. The Agency CIO signs the form signifying receipt from the test organization and is then attached to the Test Analysis Report.

The TAAD forms for non-mainframe applications and mainframe migration are located on the following pages.

TEST ANALYSIS APPROVAL DETERMINATION

Test Analysis Approval Determination Outline Non-Mainframes

DATE: _____

FROM: _____

TO: _____

We have reviewed the test results for the following application release:

TITLE:

We recommend:

() a. Full acceptance. The Test Analysis Report describes any problems encountered, which are now corrected.

() b. Full implementation with modifications implemented in a future release. The Test Analysis Report describes the outstanding discrepancies and the potential impact of these items to the End User.

() c. Partial implementation. The Test Analysis Report details the recommended implementation limitations, and describes the impact and expected results of this alternative.

() d. Rejection. The Test Analysis Report describes the reasons.

SIGNATURE: _____
Test Engineer Date

SIGNATURE: _____
T&E Leader Date

TEST ANALYSIS APPROVAL DETERMINATION

Test Analysis Approval Determination Outline Mainframes

DATE: _____

FROM: _____

TO: _____

We have reviewed the test results for the following application release:

TITLE:

We recommend:

() a. Full acceptance. The Test Analysis Report describes any problems encountered, which are now corrected.

() b. Full implementation with modifications implemented in a future release. The Test Analysis Report describes the outstanding discrepancies and the potential impact of these items to the End User.

() c. Partial implementation. The Test Analysis Report details the recommended implementation limitations, and describes the impact and expected results of this alternative.

() d. Rejection. The Test Analysis Report describes the reasons.

SIGNATURE: _____
Test Engineer Date

SIGNATURE: _____
T&E Leader Date

TEST ANALYSIS REPORT

TEST ANALYSIS REPORT

Overview

The Test Analysis Report documents software testing unit/module, subsystem integration, system, user acceptance, and security as defined in the test plan. The Test Analysis Report records results of the test., presents the capabilities and deficiencies for review, and provides a means of assessing software progression to the next stage of development or testing. Results of each type of test are added to the software development document for the module or system being tested. Reports are created as required in the remaining phases. The set of Test Analysis Reports provides a basis for assigning responsibility for deficiency correction and follow up, and for preparation of a statement of project completion.

Test Problem Report forms are generated as required and attached to the Test Analysis Reports during testing at the integration level and higher. The disposition of problems found, starting with integration testing, will be traced and reported under configuration control.

1 PURPOSE

This section should present a clear, concise statement of the purpose for the Test Analysis Report.

2 SCOPE

This section identifies the software application system tested and the test(s) conducted covered by this Test Analysis Report. The report summarizes the results of tests already conducted and identifies testing that remain to be conducted. Provide a brief summary of the project objectives, and identify the System Proponent and users.

3 REFERENCE: DOCUMENTS

This section provides a bibliography of key project references and deliverables applicable to system software testing.

3.1 Security

This section describes any security considerations associated with the system or module being tested, the test analysis, and the data being handled such as confidentiality requirements, audit trails, access control, and recoverability. If this Test Analysis Report is not documenting the formal security test, also summarize the security capabilities included in the system or module test and itemize the specific security deficiencies detected while conducting the test.

The results of specific tests, findings, deficiency analysis, and recommendations will be discussed in the subsequent sections. Reference those portions of this document that specifically address system security issues. If no deficiencies were detected during the system or module test, state this fact.

TEST ANALYSIS REPORT

3.2 Glossary

This section defines all terms and provides a list of abbreviations used in the Test Analysis Report. If the list is several pages in length, it may be placed as an appendix.

4 TEST ANALYSIS

This section describes the results of each test performed. Tests at each level should include verification of access control and system standards, functionality, and error processes. Repeat the subsections of this section for each test performed.

4.1 Test Name

The test performed for the specified unit, module, subsystem, or system is discussed in this section. For each test, provide the subsequent sections.

4.1.1 System Function

A high-level description of the function tested and a description of system capabilities designed to satisfy these functions are contained in this section. Each system function should be described separately.

4.1.2 Functional Capability

This section evaluates the performance of each function demonstrated in the test. This section also assesses the manner in which the test environment may be different from the operational environment and the effect of this difference on functional capabilities.

4.1.3 Performance Capability

This section quantitatively compares the software performance characteristics with the criteria stated in the test plan. The comparison should identify deficiencies, limitations, and constraints detected for each function during testing. If appropriate, a test history or log can be included as an appendix.

5 SOFTWARE AND HARDWARE REQUIREMENTS FINDINGS

This section summarizes the test results, organized according to the numbered requirements listed in the Trace ability section of the test plan. Each numbered requirement should be described in a separate section. Repeat the subsections of this section for each numbered requirement covered by the test plan.

5.1 Requirement Number and Name

The requirement number provided in the title to this section is the number from the requirements trace ability matrix in the test plan and the name provided is the requirement's short name.

5.1.1 Findings

This subsection briefly describes the requirement, including the software and hardware capabilities, and states the findings from one or more tests.

TEST ANALYSIS REPORT

5.1.2 Limitations

This subsection describes the range of data values tested, including dynamic and static data, for this requirement and identifies deficiencies, limitations, and constraints detected in the software and hardware during the testing.

6 SUMMARY AND CONCLUSIONS

6.1 Demonstrated Capabilities

This section provides an overview and summary analysis of the testing program. Describe the overall capabilities and deficiencies of the testing software module or system. Where tests were intended to demonstrate one or more specific performance requirements, findings should be presented that compare the test results with the performance requirements. Include an assessment of any differences in the test environment versus the operational environment that may have had an effect on the demonstrated capabilities. Provide a statement, based on the results of the system or module test, concerning the adequacy of the system or module to meet overall security requirements.

6.2 System Deficiencies

This section describes test results showing software deficiencies. Identify all problems by name and number when placed under configuration control. Describe the cumulative or overall effect of all detected deficiencies on the system or module.

6.3 System Refinements

This section itemizes any indicated improvements in system design or operation based on the results of the test period. Accompanying each improvement or enhancement suggested should be a discussion of the added capability it provides and the effect on the system design. The improvements should be indicated by name and requirement number when placed under configuration control.

6.4 Recommendations and Estimates

This section provides a statement describing the overall readiness for system implementation. For each deficiency, address the effect on system performance and design. Include any estimates of time and effort required for correction of each deficiency and any recommendations on the following:

- The urgency of each correction
- Parties responsible for corrections
- Recommended solution or approach to correcting deficiencies

6.5 Test Problem Report

This section contains copies of the test Problem Reports related to the deficiencies found in the test results. The Test Problem Report will vary according to the information system development project, its scope and complexity, etc. Test Problem Report forms are generated as required and attached to the Test Analysis Reports during testing at the

TEST ANALYSIS REPORT

integration level and higher. The disposition of problems found, starting with integration testing should be tracked and reported under configuration control.

6.6 Test Analysis Approval Determination Form

This section contains one copy of the Test Analysis Approval Determination form. This form briefly summarizes the perceived readiness for migration of the software. In the case of a User Acceptance Test, it serves as the user's recommendation for migration to production.

TEST AND EVALUATION MASTER PLAN

TEST AND EVALUATION MASTER PLAN

Overview

The Test Plan identifies the tasks and activities needed to be performed so that all aspects of the system are adequately tested and that the system can be successfully implemented. The Test Plan documents the scope, content, methodology, sequence, management of, and responsibilities for test activities. The Test Plan describes the test activities of the subsystem Integration Test, the System Test, the User Acceptance Test, and the Security Test in progressively higher levels of detail as the system is developed.

The Test Plan provides guidance for the management of test activities, including organization, relationships, and responsibilities. The test case procedures may be included in the Test Plan or in a separate document, depending on system size. The users assist in developing the Test Plan, which describes the nature and extent of tests deemed necessary. This provides a basis for verification of test results and validation of the system. The validation process ensures that the system conforms to the functional requirements in the ERD and that other applications or subsystems are not adversely affected. A test analysis report is developed at each level of testing to record the results of testing and certify readiness for system implementation (see the Integration and Test Phase).

Problems, deficiencies, modifications, and refinements identified during testing or implementation should be tracked under configuration control and tested using the same test procedures as those described in the Test Plan. Specific tests may need to be added to the plan at that time, and other documentation may need updating upon implementation. Notification of implemented changes to the initiator of the change request/problem report and to the users of the system is also handled as part of the configuration control process.

1 PURPOSE

In this section, present a clear, concise statement of the purpose for the project Test Plan and identify the application system being tested by name. Include a summary of the functions of the system and the tests to be performed

2 BACKGROUND

This section should provide a brief description of the history and other background leading up to the system development process. Identify the user organization and the location where the testing will be performed. Describe any prior testing, and note results that may affect this testing.

3 SCOPE

This section describes the projected boundaries of the planned tests. Include a summary of any constraints imposed on the testing, whether they are because of a lack of specialized test equipment, or constraints on time or resources. Describe constraints in greater detail in Section 5.1, Limitations.

TEST AND EVALUATION MASTER PLAN

4 GLOSSARY

This section provides a list of all terms and abbreviations used in this document. If the list is several pages in length, it may be placed as an appendix.

5 LIMITATIONS AND TRACE ABILITY

This section elaborates on the limitations summarized in Section 3, Scope, and cross-references the functional requirements and detailed specifications to the tests that demonstrate or partially demonstrate that capability.

5.1 Limitations

This section describes limitations imposed on the testing, whether they are because of a lack of specialized test equipment, or constraints on time or resources. Indicate what steps, if any, are being taken to reduce program risk because of the test limitations(s).

5.2 Trace ability (Functional Requirements Trace ability Matrix)

This section expands the trace ability matrix created in the ERD by including test activities that address user requirements. The matrix begins with the user requirements and assists in tracing how the requirements are addressed in subsequent phases and documents, including the System Design Document and Test Plan, the matrix may be broken up into segments, if appropriate. For example, a separate matrix of test plan sections that reference particular sections in the system design document in the Design phase may be provided. The intent is to show that the test plan covers all functionality, performance, and other requirements associated with each design element (unit, module, subsystem, and system) in the system design document.

When a test supports a particular requirement, the relationship should be noted at their intersection in the matrix. The listed requirements may be explicitly stated or may be derived or implicit. All explicit requirements must be included. The granularity of the list should be detailed enough that each requirement is simple and testable.

6 TEST PLANS

This section describes the levels of tests that take place during development: integration, system security, and user acceptance tests, and the planning that is needed. The test environment is described in terms of milestones, schedules, and resources needed to support testing.

6.1 Test Levels

This section should include a list of the types of software testing to be performed. List all applicable levels and enter “Not applicable” if a particular level of testing does not apply to the project.

6.1.1 Subsystem Integration Test

This section discusses the tests that examine the subsystems made up of integrated groupings of software units and modules. This is the first level of testing where problem

TEST AND EVALUATION MASTER PLAN

reports are generated; these reports are classified by severity, and their resolution is monitored and reported. Subsystem integration test results (including the test data sets and outputs produced from the tests) may be delivered as part of the final Test Plan, with the integration test analysis report or as an appendix.

6.1.2 System Test

This section describes the type of testing that determines system compliance with standards and satisfaction of functional and technical requirements when executed on target hardware using simulated operational data files and prepared test data. System documents and training manuals are examined for accuracy, validity, completeness, and usability. During this testing period, software performance, response time, and ability to operate under stressed conditions are tested. External system interfaces are also tested. All findings are recorded in a system test analysis report.

6.1.3 User Acceptance Test

This section describes the tests performed in a non-production environment that mirrors the environment in which the system will be fielded. Every system feature may be tested for correctness and satisfaction of functional requirements. System interoperability, all documentation, system reliability, and the level to which the system meets user requirements is evaluated. Performance tests may be executed to ensure that screen response time, program run time, operator intervention requirements, and reconciliation issues are addressed.

6.1.4 Security Test

This section describes the tests performed to determine if the system meets all of the security requirements listed in the FRD. Include internal controls or application security features mentioned in the context of security testing. Security testing is performed in the operational (production) environment under the guidance of the security staff.

6.2 Test Environment and Schedules

This section provides a brief description of the inputs, outputs, and functions of the software being tested.

6.2.1 Software Description

This section lists the software being tested. Provide a description of the purpose of the software being tested, and any interfaces to subsystems or other components of the system.

6.2.2 Milestones

This section lists the milestone events and dates for the testing.

6.2.3 Organizations and Locations

This section provides information on the participating organizations and the location where the software will be tested.

TEST AND EVALUATION MASTER PLAN

6.2.4 Schedule

This section shows the detailed schedule of dates and events for the testing by location. Events should include familiarization, training, test data set generation, and collections, as well as the volume and frequency of the input for testing.

6.2.5 Resource Requirements

This section and associated statements define the resource requirements for the testing.

6.2.5.1 *Equipment*

This section shows the expected period of use, types, and quantities of equipment needed.

6.2.5.2 *Software*

This section lists other software needed to support testing that is not part of the software being tested. This should include debugging software and programming aids as well as many current programs to be run in parallel with the new software to ensure accuracy; any drivers or system software to be used in conjunction with the new software to ensure compatibility and integration; and any software required to operate the equipment and record test results.

6.2.5.3 *Personnel*

This section lists the number of, skill types of, and schedules for personnel - from both the user, database, Quality Assurance, security, and development groups - who will be involved in the test. Include any special requirements, such as multiple-shift operation or key personnel.

6.2.6 Testing Material

This section describes the documents needed to perform the tests. It could include software, resources, data and other information.

6.2.7 Test Training

This section describes or references the plan for providing training in the use of the software being tested. Specify the types of training, personnel to be trained, and the training staff.

6.2.8 Test Methods and Evaluation

This section documents the test methodologies, conditions, test progression or sequencing, data recording, constraints, criteria, and data reduction.

6.2.8.1 *Methodology*

This section describes the general methodology or testing strategy for each type of testing described in this Test Plan.

6.2.8.2 *Conditions*

This section specifies the type of input to be used, such as real-time entered test data or canned data for batch runs. It describes the volume and frequency

TEST AND EVALUATION MASTER PLAN

of the input, such as the number of transactions per second tested, etc. Sufficient volumes of test transactions should be used to simulate live stress testing and to incorporate a wide range of valid and invalid conditions. Data values used should simulate live data and also test limited conditions.

6.2.8.3 *Test Progression*

This section describes the manner in which progression is made from one test to another, so the entire cycle is completed.

6.2.8.4 *Data Recording*

This section describes the method used for recording test results and other information about the testing.

6.2.8.5 *Constraints*

This section indicates anticipated limitations on the test because of test conditions, such as interfaces, equipment, personnel, and databases.

6.2.8.6 *Criteria*

This section describes the rules to be used to evaluate test results, such as range of data values used, combinations of input types used, or maximum number or allowable interrupts or halts.

6.2.8.7 *Data Reduction*

This section describes the techniques that will be used for manipulating the test data into a form suitable for evaluation such as manual or automated methods to allow comparison of the results that should be produced to those that are produced.

7 TEST DESCRIPTION

This section describes each test to be performed. Test at each level should include verification of access control and system standards, data security, functionality, and error processing. As various levels for testing (subsystem integration, system, user acceptance testing, and security) are completed and the test results are documented, revisions or increments for the Test Plan can be delivered. The subsections of this section should be repeated for each test within the project. If there are many tests, place them in an appendix.

7.1 Test Name

This section identifies the test to be performed for the named module, subsystem, or system and addresses the criteria discussed in the subsequent sections for each test.

7.1.1 Test Description

Describes the test to be performed. Tests at each level of testing should include those designed to verify data security, access control, and system standards; system/subsystem/unit functionality; and error processing as required.

TEST AND EVALUATION MASTER PLAN

7.1.2 Control

Describe the test control - such as manual, semiautomatic, or automatic insertion of inputs; sequencing of operations; and recording of results.

7.1.3 Inputs

Describe the data input commands used during the test. Provide examples of input data. At the discretion of the Project Manager, input data listings may also be requested in computer readable form for possible future use in regression testing.

7.1.4 Outputs

Describe the output data expected as a result of the test and any intermediate messages or display screens that may be produced.

7.1.5 Procedures

Specify the step-by-step procedures to accomplish the test. Include test setup, initialization steps, and termination. Also include effectiveness criteria or pass criteria for each test procedure.

TEST PROBLEM REPORT

TEST PROBLEM REPORT

Overview

The Test Problem Report form (see attached) is generated as required and is attached to the Test Analysis Report during testing at the integration level and higher. The disposition of problems found, starting with integration testing will be tracked and reported under configuration control.

Generate multiple copies of Test Problem Reports related to the deficiencies found in the test results, and track problem(s) until they are resolved. The Test Problem Report will vary according to the information system development project, its scope, and its complexity.

TEST PROBLEM REPORT

Test Problem Report Outline

To:

From: _

Preparer/Contact: _____ **Phone:** _____

Program being tested: _____

Description of Test Problem

A. Expected Results

B. Actual Results

Disposition of Problem

Action Taken and Date Corrected

Risk Impact if Problem Not Corrected

Changes Required for Existing Documentation

SIGNATURES

Project Manager

System Developer

Date

Date

TRAINING PLAN

Overview

The Training Plan outlines the objectives, needs, strategy, and curriculum to be addressed when training users on the new or enhanced information system. The plan presents the activities needed to support the development of training materials, coordination of training schedules, reservation of personnel and facilities, planning for training needs, and other training-related tasks. Training activities are developed to teach user personnel the use of the system as specified in the training criteria. To develop a Training Plan, refer to the outline.

Include the target audiences and topics on which training must be conducted on the list of training needs. Include in the training strategy how the topics will be addressed. This information includes the format of the training program, the list of topics to be covered, materials, time, space requirements, and proposed schedules. Discuss QA in terms of testing, course evaluation, feedback, and course modification/enhancement.

1 INTRODUCTION

This section provides a management summary of the entire plan. It is not required to provide information in this section if the descriptions provided in the subsequent sections are sufficient.

1.1 Background and Scope

This section provides a brief description of the project from a management perspective. It identifies the system, its purpose, and its intended users. This section also provides a high-level summary of the Training Plan and its scope.

1.2 Points of Contact

This section provides the organization name (code) and title of key points of contact for system development. It includes such points of contact as the Project Manager, Program Manager, QA Manager, Security Manager, Training Coordinator, and Training representative, as appropriate.

1.3 Document Organization

The organization of the Training Plan is described in this section.

1.4 Project References

This section provides a bibliography of key project references and deliverables that have been produced before this point. For example, these references might include the Project Plan, FRD, Test Plan, Implementation Plan, Conversion Plan, and Systems Design Documents.

1.5 Security

If applicable, this section provides a brief discussion of the system's security controls and the need for security and protection of sensitive State data. If the system handles sensitive information, information should be included about labeling system outputs as sensitive.

1.6 Glossary

This section is a glossary of all terms and abbreviations used in the plan. If it is several pages in length, it may be placed as an appendix.

2 REQUIREMENTS TRACEABILITY (OPTIONAL)

If possible, this section presents a trace ability matrix that lists user requirements as documented in the FRD and traces how they are addressed in such documents as the Systems Design Document, Test Plan, and Training Plan. Cross-reference the user requirements and training needs in the appropriate sections of the Training Plan.

The requirements matrix may be broken into segments, if appropriate.

3 INSTRUCTIONAL ANALYSIS

3.1 Development Approach

This section discusses the approach used to develop the course curriculum and ensure quality training products. This description includes the methodology used to analyze training requirements in terms of performance objectives and to develop course objectives that ensure appropriate instruction for each target group. The topics or subjects on which the training must be conducted should be listed or identified.

3.2 Issues and Recommendations

Any current and foreseeable issues surrounding training are included in this section. Recommendations for resolving each issue and constraints and limitations should also be listed.

3.3 Needs and Skills Analysis

This section describes the target audiences for courses to be developed. Target audiences include technical professionals, user professionals, data entry clerks, clerical staff members, ADP and non-ADP managers, and executives. The tasks that must be taught to meet objectives successfully and the skills that must be learned to accomplish those tasks are described in this section. A matrix may be used to provide this information. Also in this section, the training needs for each target audience are discussed. If appropriate, this section should discuss needs and courses in terms of staff location groupings, such as headquarters and field offices.

4 INSTRUCTIONAL METHODS

4.1 Training Methodology

This section describes the training methods to be used in the proposed courses; these methods should relate to the needs and skills identified in Section 3.3, Needs and Skills Analysis, and should take into account such factors as course objectives, the target audience for a particular course, media characteristics, training setting criteria, and costs. The materials for the chosen training approach, such as course outlines, audiovisual aids,

TRAINING PLAN

instructor and student guides, student workbooks, examinations, and reference manuals should be listed or discussed in this section. Sample formats of materials can be included in an appendix, if desired.

4.2 Training Database

If applicable, this section identifies and discusses the training database and how it will be used during computer systems training. It discusses the simulated production data related to various training scenarios and cases developed for instructional purposes. This section also explains how the training database will be developed. If this section is not applicable to the system involved, indicate "Not applicable."

4.3 Testing and Evaluation

This section describes methods used to establish and maintain QA over the curriculum development process. This description should include methods used to test and evaluate training effectiveness, evaluate student progress and performance, and apply feedback to modify or enhance the course materials and structure.

One source of feedback could be a course - or module - specific course or instructor evaluation form. This form should gather trainee reactions on the following topics: scope and relevance of course or module, appropriateness of objectives, usefulness of assignments and materials, effectiveness of course training materials, stronger and weaker features of the course, adequacy of the facilities, timing or length of the course or module, effectiveness of the instructor(s), and participant suggestions and comments.

5 TRAINING RESOURCES

5.1 Course Administration

This section describes the methods used to administer the training program, including procedures for class enrollment, student release, reporting of academic progress, course completion and certification, monitoring of the training program, training records management, and security, as required.

5.2 Resources and Facilities

This section describes the resources required by both instructors and students for the training, including classroom, training, and laboratory facilities; equipment such as an overhead projector, projection screen, flipchart or visual aids panel with markers, and computer and printer workstations, and materials such as memo pads and pencils, diskettes, viewgraphs, and slides. Information contained in this section can be generic in nature and can apply to all courses. Specific course information and special needs may be itemized here as well or, if many different courses are involved, in Section 6. Training Curriculum.

TRAINING PLAN

5.3 Schedules

This section presents a schedule for implementing the training strategy and indicating responsible parties. Included are key tasks to be completed, such as when to set up training facilities and schedule participants; other activities essential to training; and dates on which those tasks and activities must be finished. This section provides an overview of tasks; deliverables, such as approach and evaluation forms; scheduled versus actual milestones; and estimated efforts, such as the work plan. In the final version of the Training Plan, actual course schedules by location should be included.

5.4 Future Training

This section discusses scheduled training modifications and improvements. This information can include periodic updating of course contents, planned modifications to training environments, retraining of employees, and other predicted changes. Indicate procedures for requesting and developing additional training.

6 TRAINING CURRICULUM

This section provides descriptions of the components that make up each course. If a large number of courses or modules is described, place these descriptions in an appendix. Subsections of this section, if any should be created for each course.

Each course may comprise one or more modules. A course description should be developed for each module. At a minimum, each course description should include the course/module name; the length of time the course/module will take; the expected class size (minimum, maximum, optimal); the target audience; course objectives; module content/syllabus; specific training resources required, such as devices, aids, equipment, materials, and media to be used; and any special student prerequisites. The course description could also include information on instructor-to-student ratio, total number of students to be trained, estimated number of classes, location of classes, and testing methods.

USER MANUAL

1 INTRODUCTION

The User Manual contains all essential information for the user to make full use of the information system. This manual includes a description of the system functions and capabilities, contingencies and alternate modes of operation, and step-by-step procedures for system access and use. Use graphics where possible in this manual. The manual format may be altered if another format is more suitable for the particular project.

1.1 Purpose and Scope

This section provides a description of the purpose and scope of the User Manual.

1.2 Organization

This section describes the organization of the User Manual.

1.3 Points of Contact

This section identifies the organization codes and staff (and alternates if appropriate) who may assist the system user. If a help desk facility or telephone assistance organization exists, describe it in this section.

1.4 Project References

This section provides a bibliography of key project references and deliverables that have been produced prior to this point in the system development process.

1.5 Primary Business Functions

This section discusses the business perspective of the user's primary responsibilities and tasks as they are supported by the system. Introduce the business functions so that the focus may rest on the systematic steps to support the business functions in later sections.

1.6 Glossary

This section provides a glossary of all terms and abbreviations used in the manual. If the glossary is several pages or more in length, it may be placed as an appendix.

2 SYSTEM CAPABILITIES

This section provides a brief overview of the system and its capabilities.

2.1 Purpose

This section describes the purpose of the application system.

2.2 General Description

This section provides an overview of the system's capabilities, functions, and operation, including the specific high-level functions performed by the system. Use graphics and tables, if appropriate.

3 DESCRIPTION OF SYSTEM FUNCTIONS

This section describes each specific function of the system. In this high-level section, describe any conventions to be used in the associated subsections. Each of the subsequent sections should be repeated as often as necessary to describe each function within the system. The term “Function X” in the subsection title is replaced with the name of the function.

3.1 Function X Title

This section provides the title of the specific system function.

3.2 Detailed Description of Function

This section provides a description of each function. Include the following, as appropriate:

- Purpose and uses of the function
- Initialization of the function, if applicable
- Execution options associated with this function
- Description of function inputs
- Description of expected outputs and results
- Relationship to other functions
- Summary of function operation

3.3 Preparation of Function Inputs

This section defines required inputs. These inputs should include the basic data required to operate the system. The definition of the inputs include the following:

- Title of each input
- Description of the inputs, including graphic depictions of display screens
- Purpose and use of the inputs
- Input medium
- Limitations and restrictions
- Format and content on inputs, and a descriptive table of all allowable values for the inputs
- Sequencing of inputs
- Special instructions
- Relationship of inputs to outputs
- Examples

3.4 Results

This section describes expected results of the function. Include the following in the description as applicable:

- Description of results, using graphics, text, and tables
- Form in which the results will appear
- Output form and content

- Report generation
- Instructions on the use of outputs
- Restrictions on the use of outputs
- Relationship of outputs to inputs
- Function-specific error messages
- Function-specific or context-sensitive help messages associated with this function
- Examples

4 OPERATING INSTRUCTIONS

This section provides detailed, step-by-step system operating instructions.

4.1 Initiate Operation

This section contains procedures for system logon and system initialization to a known point, such as a system main menu screen. This initialization procedure should describe how to establish the required mode of operation and set any initial parameters required for operation. Software installation procedures should be included if the software is distributed on diskette and should be downloaded before each use.

4.2 Maintain Operation

This section defines procedures to maintain the operation of the software where user intervention is required.

4.3 Terminate and Restart Operations

This section defines procedures for normal and unscheduled termination of the system operations and should define how to restart the system.

5 ERROR HANDLING

This section should address error message and help facilities. Additional information and subsections may be added as necessary. Included in this section should be a list of all possible error messages, including the following:

- Any numeric error codes associated with the error message
- A description of the meaning of the error message
- A discussion of how to resolve the error

5.1 HELP FACILITIES

This section describes any resident help software or any Service or contractor help desk facility that the user can contact for error resolution. Help desk telephone numbers should be included.

VERSION DESCRIPTION DOCUMENT

VERSION DESCRIPTION DOCUMENT

Overview

The Version Description Document (VDD) is the primary configuration control document used to track and control versions of software to be released to the operational environment. It is a summary of the features and contents for the software build. It identifies and describes the version of the software being delivered to the State, including all changes to the software since the last VDD was issued. Every unique release of the software (including the initial release) shall be described by a VDD. If multiple forms of the software are released at approximately the same time (such as, to different sites) each must have a unique version number and a VDD. The VDD is part of the software CI product baseline. The VDD, when distributed, should be sent with a cover memo that summarizes, on a single page, the significant changes that are included in the release. This will serve as an executive summary for the details found in the attached VDD. The treatment should be titled, on the cover memo, as Summary of Changes.

1 GENERAL

1.1 Roles and Responsibilities

The following roles and responsibilities apply to the VDD:

- The CM representative will prepare the VDD with the help of the project team.
- Members of the Project Manager's organization will normally prepare Sections 3.5, Adaptation Data, through 3.9, Glossary, appendices, and the Summary of Changes cover memo.

1.2 Process

A VDD is prepared according to the outline at the end of this document, and specific instructions are provided in the subsequent sections.

2 SCOPE

2.1 Identification

Provide full identification number(s), title(s), and abbreviation(s); and, if applicable, provide the version number(s) and release number(s). Identify the intended recipients of the VDD.

2.2 Applicability

Identify the intended recipients of the software release and the operating system to be used.

2.3 System Overview

Provide a brief statement of the purpose of the system and the environments to which this document applies. Describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify current and planned operating sites; and list other relevant documents.

VERSION DESCRIPTION DOCUMENT

2.4 Documentation Overview -

Summarize the purpose and contents of this document and describe any security or privacy considerations associated with its use.

2.5 Points of Contact

Provide a list of both State and performance contractor(s) points of contact involved in this effort.

3 REFERENCE DOCUMENTS

List the number, title, revision, and date of all documents referenced in or used in the preparation of this VDD. If this VDD is an update to an existing system, list the VDD that this version is replacing as a reference document.

4 VERSION DESCRIPTION

Summarize briefly the contents of the ensuing sub-paragraphs (to include materials contained in the release, software components of the subsystem software CI, documents used to establish the configuration of the software CI, and any known problems).

4.1 Inventory of Materials Released

List by CM numbers, titles, abbreviations, dates, version numbers, and release numbers (as applicable), all physical media (for example, listings, tapes, disks) and associated documentation that make up the software version being released. Include applicable security and privacy considerations for these items, safeguards for handling them, such as concerns for static and magnetic fields, and instructions and restrictions regarding duplication and license provisions.

4.2 Inventory of Software Contents

List by identifying numbers, titles, abbreviations, dates, version numbers, and release numbers (as applicable), all computer files that make up the software version being released. Any applicable security and privacy considerations should be included.

4.3 Changes Installed

List all changes incorporated into the software version since the previous version. Identify, as applicable, the TPRs, SCRs, and migration forms associated with each change and the effects, if any, of each change on system operation and on interfaces with other hardware and software. (This section does not apply to the initial software version.)

4.4 Interface Compatibility

List and describe any other systems or CIs affected by the change(s) incorporated in the current version, if applicable.

4.5 Adaptation Data

Identify and reference all unique-to-site data contained in the software version. For software versions after the first, describe changes made to the adaptation data.

VERSION DESCRIPTION DOCUMENT

4.6 Bibliography of Reference Documents

List by identifying numbers, titles, abbreviations, dates, version numbers, and release numbers (as applicable), all documents that establish the current version of the software.

4.7 Installation Instructions

Provide or reference the following information, as applicable:

- Instructions for installing the software version, including instructions for deletion of old versions
- Identification of other changes that have to be installed for this version to be used, including site-unique adaptation data not included in the software version
- Security, privacy, or safety precautions relevant to the installation
- Procedures for determining if the version has been installed properly
- A point of contact to be consulted if there are problems or questions with the installation

4.8 Possible Problems and Known Errors

Identify any possible problems or known errors with the software version at the time of release, any steps being taken to resolve the problems or errors, and instructions (either directly or by reference) for recognizing, avoiding, correcting, or otherwise handling each one. The information presented will be appropriate to the intended recipient of the VDD (for example, a user agency may need advice on avoiding errors, a support agency on correcting them).

4.9 Glossary

Include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document. Also provide a list of any terms and definitions needed to understand this document.

5 APPENDICES

Appendices may be used to provide information published separately for convenience in document maintenance (for example, charts, classified data, etc.). As applicable, each appendix will be referenced in the main body of the document where the data would normally have been provided. Appendices will be lettered alphabetically (A, B, etc.), and the pages will be numbered A—1, A—2, etc.

VERSION DESCRIPTION DOCUMENT

Version Description Document
For the _____ System

This is to document the following changes contained in version _____ of the:

Application Name: _____
Located at: _____

The changes are as follows:

This version change is in response to:

____ Change implementation notice number (s) _____
____ User group meetings
____ Change in technology
____ Other _____

Signed: _____
Chief Information Officer

Date; _____

Signed: _____
Application Project Manager

Date: _____